

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1830.—Vol. XL.

LONDON, SATURDAY, SEPTEMBER 17, 1870.

(WITH SUPPLEMENT) {STAMPED ...SIXPENCE.  
UNSTAMPED...FIVEPENCE.

**MR. JAMES CROFTS, STOCK AND SHAREBROKER,**  
No. 1, FINCH LANE, CORNHILL.  
(ESTABLISHED 1842.)  
HOLDERS of mining shares DIFFICULT OF SALE in the open market may find purchasers for the same through Mr. CROFTS' agency. Also parties requiring vice how to act in the disposal or abandonment of doubtful mining stocks may safely avail of Mr. CROFTS' long experience on the market in all cases of sale or difficulty, legal or otherwise.

**ROCHE CONSOLS.**  
Mr. CROFTS recommends the immediate purchase of these shares at present price—15s. A splendid improvement has taken place at the mine. Every description of shares BOUGHT and SOLD at NET prices.  
Bankers: Metropolitan Bank.

**MR. W. H. BUMPUS, STOCK AND SHAREDEALER,**  
44, THREADNEEDLE STREET, LONDON, E.C., has FOR SALE the following SHARES, free of commission:—  
Ashton, £67½  
Australian Uni., 27s 3d  
Barnard, £2 3s 3d  
Bradford Cons., 25s 9d  
Bulch Consols, £34½  
Chontales, 11s. 3d  
Carnegion, 30s.  
Drake Walls, 26s.  
Devon Great Consols.  
Don Pedro, £24 pm.  
East Lovell, £23½  
East Caradon, £24½  
East Seton, 18s.  
W. H. B. transacts business in every description of shares at the best market price, and free of commission.  
Daily Price-List free on application.  
Bankers: The Metropolitan Bank (Limited), Cornhill, E.C.

**JOHN RISLEY, (SWORN) STOCK AND SHAREBROKER,**  
48, THREADNEEDLE STREET, LONDON, E.C.  
J. R. is a BUYER of Wheal Grenville, East Grenville, Wheal Crebor, at 10s., and West Caradon shares.  
Bankers: London and Westminster, Lothbury.

**MR. Y. CHRISTIAN, STOCK AND SHAREDEALER,**  
11, ROYAL EXCHANGE, E.C.  
Bankers: Bank of England.

**MR. T. A. MUNDY, STOCK AND SHAREDEALER,**  
38, BISHOPSGATE STREET WITHIN, E.C.  
Bankers: City Bank.

**MR. JOHN MOSS, STOCK AND SHAREDEALER,**  
ST. MICHAEL'S CHAMBERS, 42, CORNHILL, E.C.  
Bankers: City Bank, Finch-lane, E.C.

**MR. WILLIAM SEWARD, STOCK AND MINING SHAREBROKER,**  
19, THROGMORTON STREET, LONDON, E.C.  
Every description of shares BOUGHT and SOLD at the best market prices.

**MR. C. A. POWELL, BRITISH AND FOREIGN STOCK AND SHAREDEALER,**  
No. 1, PINNER'S COURT, OLD BROAD STREET, LONDON, E.C.  
BUYER or SELLER of Taquaril, Pacific, Tankerville, Frontino, Sweetland Creek, and East Lovell.  
SPECIAL BUSINESS in North Trekerby and Calbeck Fells.  
Bankers: City Bank, Finch-lane.

Established upwards of Twenty Years in Cornwall and London.  
**MR. J. R. PIKE, STOCK AND SHAREDEALER,**  
3, CROWN CHAMBERS, THREADNEEDLE STREET.

**MESSRS. W. DUNN AND CO., STOCK AND SHAREDEALERS,**  
3 AND 4, GREAT WINCHESTER STREET BUILDINGS, LONDON, E.C.  
Bankers and Reference: National Provincial Bank of England.

FOR SALE, at prices affixed:—  
Aberdaunt, 17s.  
Barnard, £2 2s. 6d.  
Bulch Consols, £31 1s  
Cardigan Bay, £52 6  
Cefn Consols, £5 12s 6  
Chiverton, £1 15s.  
Chontales, 12s. 6d.  
Don Pedro, £22 pm.  
Drake Walls, £1 5s 3d  
East Basset, £3.  
East Caradon, £4 5s.  
East New Lovell, 10s.  
East Pool, £2 2s. 6d.  
East Seton, £2 14s.  
Frank Mills, £2 12s. 6d.  
Great Rock, £1 17s.  
Great Vor, £6 11s. 3d.  
Guerrero, fully paid, 7s. 6d.  
Holmbush and Kelly, 6s. 3d.  
Marke Valley, £2 18s 9  
North Crofty, £2.  
Pacific, £2 13s. 6d.  
Pen-Allt, £1 11s. 3d.  
Penhalls, £2 15s.  
Plynlimmon, £2 1s 3d  
St. John del Rey, £22  
St. Condurow, £2 5s.  
South Darren, £1 7s 6  
St. Merilyn, £2 12s 6d  
St. No. Van, fully pd., 8s.  
Sweetland CK., £2 13s 6  
Tankerville, £15.  
Tearas Tin, £1 10s.  
Tincroft, £36.  
Van Consols, £2 2s 6d  
West Caradon, 18s.  
Wt. Chiverton, £53½  
Wt. Esgrail Lio, £2 7s  
Wt. Jewell, £2 15s.  
Wt. Tankerville, £2 12s 6  
Wheal Agar, £2 1s.  
Wheal Crebor, 14s.  
Wheal Killy (St. Agnes), £1 17s.  
Wheal Margaret, 8s.  
Wheal Seton, £48½  
Wheal Trearway, 2s.

**ANDERSON AND CO., STOCK AND SHAREDEALERS,**  
BRITISH AND FOREIGN STOCK, SHARE, AND MINING OFFICES,  
85, GRACECHURCH STREET, LONDON, E.C.  
We specially invite the attention of investors and capitalists to the GEFIRON MINING COMPANY, advertised in last week's Journal. The property is a bona fide one, having the Van lode running entirely through it, with levels driven, the lode is, and raising ore worth £18 to £20 per ton, a further improvement being fully expected; and it is likely to be the great centre of attraction in the Van district. From the numerous applications for shares from all parts of the country, it will be a great success. Every investor desirous of making money should apply for shares. A prospectus, plans, and forms of application can be had at the office.  
The TERRAS TIN MINE is an extraordinary rich tin property. We have examined it, and are convinced of its value. (See Prof. White's report in this Journal, and supported by Mr. G. Henwood, who concurs with us that there is mineral property in the West of England of equal value. We have 50 shares, any portion, for sale at 30s. each. These should be bought at once.  
ANDERSON and Co., 85, Gracechurch Street, London.

**MR. WILLIAM MARLBOROUGH, 1, GREAT ST. HELEN'S,**  
BISHOPSGATE STREET, LONDON, E.C. (Established 16 years), has FOR SALE the FOLLOWING SHARES, at net prices:—  
Aberdaunt, 19s 3d.  
Australian Uni., 27s 3d.  
Barnard, £2 3s 3d.  
Bulch Consols, £34½  
Chiverton Moor, £34½  
Chiverton Val., £2 11s 6  
Chontales, 10s. 9d.  
Cefn Consols.  
Cardigan Bay, £25½  
Drake Walls, 24s. 6d.  
Don Pedro, £22 pm.  
Dolcoath, £124½  
East Lovell, £23 12s 9d  
East Basset, £4.  
50 Prince of Wales, 14s 3  
50 Pen-Allt, 31s. 9d.  
100 Rosa Grande, 6s. 9d.  
100 St. Condurow, 48s. 9d.  
20 Spear Moor, £18½  
30 Sweetland Creek, 56s.  
5 St. John del Rey, £21½  
30 Trumpton Con., £22½  
50 Taquaril, 21s. 9d. pm.  
5 Tankerville, £14 18s.  
3 Tincroft, £35½  
50 Terras.  
20 Van Consols, £2 4s 3d  
2 Wheal Seton, £48½  
1 Wt. Chiverton, £53½  
20 West Maria, 21s. 9d.  
50 Yudanamutana, 23s.  
And is a BUYER of 2 Providence, at £39; 2 Herodsfoot, £43; 1 Dolcoath, £22½; 5 Great Vor, £26½; 20 East Pool, £8½; 100 Great Retallack, 15s.; and Taquaril, 20s. pm.  
REPLY TO—W. M. invites attention to the report of the agent. All particulars forwarded upon application.

**MR. GEORGE BUDGE, STOCK AND SHAREDEALER,**  
No. 4, ROYAL EXCHANGE BUILDINGS, LONDON, E.C. (Established 31 years), is a SELLER at net prices of:—  
Lisburn, £1 (1853); 2 Devon Great Consols, £78½; 5 Minera; 5 Great Lacey, £4½; 5 West Chiverton, £53½; 2 Wheal Seton; 65 East Chiverton; 75 Caedon; 50 Drake Walls, 24s. 6d.; 25 East Grenville, 5s. 9d.; 15 Maes-y-Safn; 1 Prince of Wales, 14s. 3d.; 25 East New Lovell, 5s. 9d.; 1 Dolcoath; 40 North Trekerby; 5 Polbreton, £4½; 25 Bulch Consols; 100 West Esgrail Lio, 87s. 9d.; Tankerville; 50 Great Caradon, 15s.; 60 Crebor, 13s.; 85 Gwanton; 50 Okei, 27s. 10s.; 50 Taquaril, 23s. pm.; 20 Eberhardt, £13; 200 Rosa Grande; 70 Sweetland Creek; 60 Yudanamutana, 21s. 9d.; 80 Colorado Terrible.

**TANKERVILLE, WEST TANKERVILLE, AND WELSH LEAD MINES.**  
EAST WHEAL LOVELL, AND OTHER CORNISH MINES.  
PETER WATSON'S "WEEKLY MINING CIRCULAR AND SHARE LIST—SYNOPSIS OF CORNISH AND DEVON MINES," &c., of Friday, Sept. 16, No. 598, price 6d. each copy, forwarded on application, contains information on the following mines:—  
Tankerville. Rosewall Hill and Wheal Mary Ann.  
West Tankerville. Ransom. Taquaril.  
North Crofty. East Lovell. Anglo-Brazilian.  
New Lovell. East Seton. Don Pedro.  
South Darren. Great Western. Yudanamutana.  
Great Vor.  
With Particulars of the Tin Trade, Mine Dividends in August, &c.

**MR. PETER WATSON, STOCK AND SHAREDEALER,**  
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Bankers: The Alliance Bank, and Union Bank of London.

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Read the "LONDON DAILY RECORD—STOCK AND SHARE LIST," as to what to buy at once for investment.  
The "London Daily Record" is published by P. WATSON, Stock and Share Dealer, 79, Old Broad-street, E.C., every evening, and forwarded by post to subscribers. Annual subscription, £1 1s.; by post, £2 2s.

**MR. EDWARD COOKE, STOCK AND MINING SHAREDEALER,**  
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Bankers: Alliance Bank.

**MR. W. H. COUCELL,**  
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Daily price-list on application.

**MR. WILLIAM MICHELL, 42, CORNHILL,**  
LONDON, E.C.  
Dealer in British Mines, Stocks, Shares, &c.

**MR. E. J. BARTLETT, STOCK AND SHAREDEALER,**  
No. 80, GREAT ST. HELEN'S, LONDON, E.C., transacts business at net prices in every description of security.  
Sixth edition of "How to Invest," &c., forwarded for seven stamps.

**MESSRS. J. HUME AND CO., STOCK AND SHAREBROKERS,**  
74, OLD BROAD STREET, LONDON, E.C.  
A list of recommendations on application.  
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**MR. J. B. HAWKES, STOCK AND SHAREDEALER,**  
3, CROWN COURT, THREADNEEDLE STREET, E.C., has FOR SALE the following SHARES:—  
1 Wheal Basset, £73½  
20 W. Tankerville, 56s 6d  
30 Wheal Agar, 41s.  
50 Gwydyr Park, 7s. 9d.  
20 East Caradon, £4½  
20 Wt. Grenville, 33s.  
2 West Frances, £29½  
50 Gt. So. Toigus, 7s.  
2 New Wt. Seton, £20.  
20 Penrhyn, £2 7s. 6d.  
5 Wt. Mary Ann, £29½  
5 Ashton, £4½  
20 Eclipse, 2s. 6d. dis.  
20 Holmbush, 5s. 9d.  
50 West Drake Walls, 5s  
20 Tin Valley, 5s.  
1 South Frances, £30½  
20 Brynpostig, 15s.

Twenty-six Years' Experience.  
**MR. F. W. MANSELL, STOCK AND SHAREDEALER,**  
1, PINNER'S COURT, OLD BROAD STREET, LONDON, E.C., having been connected with the Mining Market for the above period, and constantly visiting the mines of Cornwall and Wales, is at all times in a position to give reliable advice in the purchase and sale of shares.  
Mr. MANSELL is instructed to advance £2000 upon mining shares, at 6 per cent. Applications personal, or by letter as above.  
Daily List of closing prices in British and Foreign mines published every evening, and forwarded to correspondents (free).  
References exchanged.  
Bankers: London Joint-Stock Bank.

**SILK AND CO., STOCK AND SHARE BROKERS.**  
CHIEF OFFICES: 32, REGENT STREET, W.  
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BUSINESS of every description in Stocks and Shares negotiated at the closest market rates for cash only.  
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Orders by letter or telegram punctually attended to at closest market prices.  
Money advanced to any extent on good mining shares.  
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**MR. W. TREGELLAS, 122, BISHOPSGATE STREET WITHIN, E.C.,** recommends his friends to purchase shares in the TAQUARIL GOLD MINE, as a great rise in price is certain. The mail arrived this week from the Brazil, bringing 1850s. of gold, obtained from 6 tons of stuff. Further auriferous lodes had been discovered, placing the future of the mine beyond all doubt.  
W. T. advises a careful perusal of the reports, and he is prepared to afford his clients the fullest information for their guidance in buying or selling shares.

**MR. T. R. COMYN, STOCK AND SHAREDEALER,**  
31, THREADNEEDLE STREET, E.C.  
Mr. COMYN having for years paid much attention to the Mining Share Market, feels fully justified in offering advice on what to buy or sell.  
Mr. C. will not advise on any mine unless he has personally inspected the same. He can with the utmost confidence recommend the purchase of shares in the CEFN CONSOLS LEAD and WEST JEWELL TIN MINES. Both of these are opening out splendidly. In the former, the ore ground discovered only waits the necessary working arrangements to enable good returns to be made; and in the latter within the last four months £5000 worth of tin ground has been discovered, in addition to which £1000 worth of tin has been sold, and competent authorities state that both will pay large dividends. The shares are fully paid up.  
Every description of Stocks and Shares dealt in. References given.  
Bankers: National Provincial Bank of England, E.C.

**MR. HENRY MANSELL, STOCK AND SHAREDEALER,**  
1, PINNER'S COURT, OLD BROAD STREET, LONDON, has FOR SALE, at net prices, for cash, the FOLLOWING SHARES:—  
30 Drake Walls, 24s. 9d.  
20 East Caradon, £4 8s 9d  
30 Bronfloyd, £2 3s. 9d.  
50 Excelcior, offer wtd.  
25 Aberdaunt.  
60 Tamar Valley, 11s.  
40 West Esgrail Lio.  
100 West Pant-y-Go.  
25 New Lovell, £2 2s. 9d  
20 Tankerville, £13.  
100 North Trekerby, 2s.  
TERRAS TIN MINE.—Mr. HENRY MANSELL calls the attention of his clients and others to the Special Reports on this property (in this day's Journal), and would strongly advise the purchase of the shares at present low prices, feeling convinced, from a personal inspection just made, that a great advance from present quotation (30s. each) will soon be had.  
TAQUARIL, VAN CONSOLS, and WEST JEWELL shares should also be bought.  
Bankers: London Joint-Stock Bank.

**BARTLETT AND CHAPMAN, STOCK AND SHARE DEALERS,**  
36, CORNHILL, LONDON, E.C.  
The INVESTMENT CIRCULAR, published on the first Wednesday in each month. Subscription, 5s. a year, including postage; a single copy, 6d.  
The HANDY-BOOK FOR INVESTORS, comprising a sketch of the Rise, Progress, and Present Character of every species of Investment, British, Colonial, and Foreign; including an estimate of their comparative safety and profit. Bound in cloth, 10s. 6d.  
BRITISH MINES AND MINING, comprising a comparison of Mining with other Investments; a description of the Mining Districts of the United Kingdom, and a detailed account of the Tin, Copper, Lead, and other Mines in Cornwall, Devon, Salop, Wales, and the Isle of Man; with a complete Glossary of Mining Terms. Bound in cloth, 2s. 6d.  
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MINING AGENT, AND GENERAL SHAREDEALER,  
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**MR. JOHN GIBBS, STOCK AND SHAREDEALER,**  
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All kinds of shares bought and sold at closest market prices.  
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Business operations in Mining Shares effected at close market rates.

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(Established 1852)  
**MESSRS. SHARP, STOCK AND SHARE DEALERS,**  
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Are always in a position to give good advice and reliable information upon mining investments and Stocks and Shares of every description.

BUSINESS in ALL the UNDERMENTIONED MINES at close prices net:—  
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Bronfloyd. Great Vor. Van Consols.  
Cook's Kitchen. Marke Lacey. West Tankerville.  
Dolcoath. Mine Valley. West Wheal Seton.  
Dine Dong. Spearn Moor. West Chiverton.  
East Lovell. Taquaril. Wheal Grenville.  
East Caradon. Tincroft. Wheal Seton.  
East Pool. Trumpton Consols. Wheal Kitty (St. Agnes).  
East Grenville. West Maria.

SHARES WANTED TO PURCHASE for IMMEDIATE CASH:—  
4 Dolcoath. 20 West Frances. 2 West Wheal Seton.  
5 Providence. 500 West Pant-y-Go. 10 Wheal Seton.  
20 Plynlimmon. 20 West Chiverton. 100 Wt. Kitty (St. Ag.)  
N.B.—Sellers will please state number and lowest price.

SHARPS FOR SALE (offer wanted)—25 East Trumpton.  
N.B.—Sellers will please state number and lowest price.

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COLONIAL AND FOREIGN PATENT LAWS.  
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Established 1835.

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44, THREADNEEDLE STREET, E.C., have SPECIAL BUSINESS in the undermentioned:—  
Pacific Gold. Sweetland Creek. Great Vor.  
East Lovell. Tankerville. Anglo-Brazilian.  
Wt. Kitty (St. Agnes). Spearn Moor. Taquaril.  
East Caradon. Marke Valley. Tincroft.

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**LAVINGTON AND PENNINGTON'S "MONTHLY RECORD OF INVESTMENTS,"** containing an exhaustive Review of the British and Foreign Stock and Share and Money Markets, &c., with an enumeration of safe investments, paying from 10 to 20 per cent. Price 6d. per copy, or 5s. annually.  
G. LAVINGTON and A. PENNINGTON, 44, Threadneedle-street, London, E.C.

NOTICE.  
FOR INFORMATION OF PRICES obtainable for the following Mines, or at what they may be procured, apply to the undersigned, who also effects Purchases and Sales (when practicable) in every description of shares at net prices. It is advantageous to those applying to state the number.  
Cargoll. North Crofty. Wt. Kitty (St. Agnes).  
Cook's Kitchen. New Lovell. West Maria.  
Devon Consols. Penhalls. Wheal Seton.  
Dolcoath. Providence. Wheal Basset.  
Drake Walls. Spearn Moor. Wheal Mary Ann.  
East Basset. South Condurow. Wheal Agar.  
East Grenville. South Frances. Wheal Builer.  
Frank Mills. Tankerville. Wheal Grenville.  
Great Lacey. Tincroft. Wheal Uny.  
Great Vor. Van Consols. Chontales.  
Grenville. West Frances. Don Pedro.  
Herodsfoot. West Chiverton. Sweetland Creek.  
Margaret. West Seton. Pacific.  
Marke Valley. West Seton. Taquaril, &c.  
JAMES BRENCHELEY, Sharedealer, 32, Nicholas-lane, Lombard-street, London.  
Established in 1854.

**HOOKE AND CO., STOCK AND SHAREDEALERS,**  
LIFE, FIRE, AND MARINE INSURANCE AGENTS,  
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Every description of Stocks, Shares, &c., BOUGHT or SOLD, for cash or fortnightly settlement.  
We can with confidence recommend investment in the ABERDAUNT LEAD MINE COMPANY, Limited (see report in this day's Journal); in the GEFIRON MINING COMPANY, Limited (both in the Llanidloes district, and on the Van lode); also in the TERRAS TIN MINING COMPANY, Limited, in Cornwall, from which latter property we have lately returned thoroughly satisfied, after a minute inspection, that it is more valuable than has been represented.  
We are purchasers for cash in the GUATIMOZIN MINE, in Mexico. Offers must not exceed £10,000 per bar (or 24th part). We are also purchasers in MARAVILLAS.  
Confidential reports furnished on moderate terms on Spanish, German, Italian, Mexican, and Brazilian mines.  
Orders and telegrams receive prompt attention.  
HOOKE and Co., 26, Martin's-lane, Cannon-street, London, E.C.

**MR. H. WADDINGTON, SHAREDEALER, 48, THREADNEEDLE STREET, LONDON.**  
SHARES FOR SALE—50 East Providence, 10s.; 1 New Seton, £31; 200 East Carn Brea; 100 Great South Toigus; 20 Great South Chiverton.  
OFFER WANTED—50 Tin Valley.

**MR. JOHN B. REYNOLDS, OF 70 AND 71, BISHOPSGATE STREET WITHIN, LONDON, E.C.,** TRANSACTS BUSINESS in British and Foreign Stocks of every description, Railways, Foreign Bonds, Colonial Securities, &c.  
British and Foreign Mine Shares are negotiated by him for cash.  
Net prices are charged on all transactions, and no commission is ever payable.  
Transfer of Stocks of any description, and to any amount, can be exchanged at any London bankers for the purchase-money, and no delay that can possibly be avoided is ever suffered in the delivery of Stock.  
Mr. REYNOLDS undertakes the inspection of mines by first-class authorities, and, through his correspondence, is enabled to get reliable information.  
Established in London Thirteen Years.  
Bankers during the whole period: City Bank, Threadneedle-street, London.

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32, NEW BROAD STREET, E.C.  
ALFRED FISHER, MANAGER.

GEIFRON MINE is the next valuable mine in Wales. Capitalists, investors, will do well to apply for a prospectus, which will be forwarded free on application.  
Capitalists can make money by immediately purchasing shares in the TERRAS TIN MINE (Limited). We have 45 to offer at 30s. each. These are the cheapest and safest stocks offered to the public.  
Information and advice given on all stocks, and dealt in for cash or account.  
ALFRED FISHER, 32, New Broad Street, London.

**FOR SALE, ONE HUNDRED AND FIFTY BUDNICK CONSOLS (Tin),** at 15s. Quoted in the Mining Journal at £1¼ to £1½. Apply to "A. B.," 104, High-street, Newport, Isle of Wight.

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No. 34, OLD BROAD STREET, LONDON, E.C.  
Business transacted for prompt cash, or if preferred for account, in every description of tin, lead, copper, gold, and silver mining shares at net prices.  
Money advanced on mining shares for account, or a longer period if desired.  
BUDNICK CONSOLS.—These shares are worth attention for a great rise.  
Telegrams promptly attended to.  
Bankers: The Alliance Bank, London, E.C.





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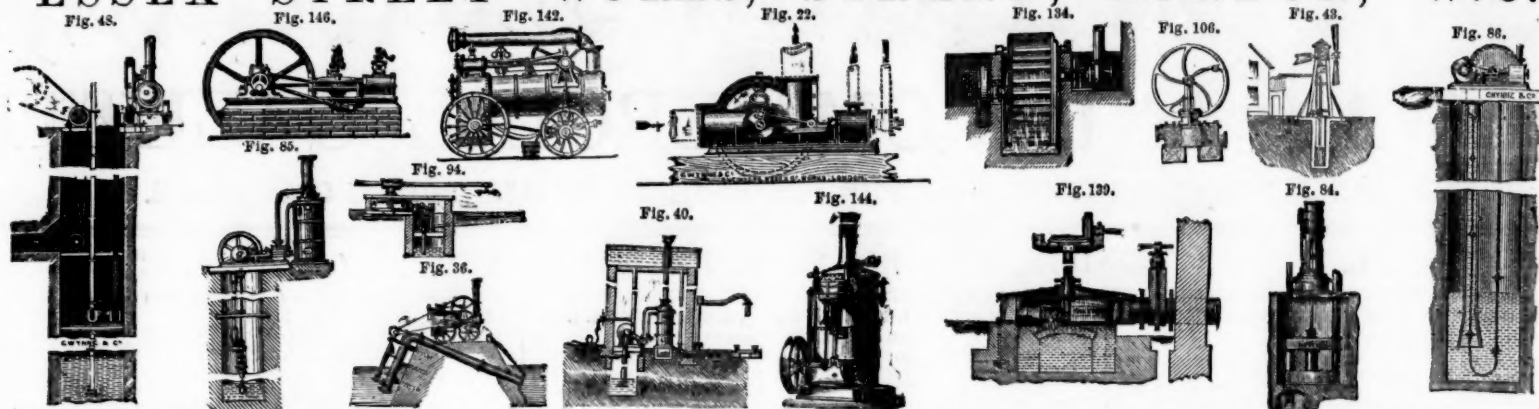


Fig. 144.—Vertical Engine, all sizes, from 2 to 20-horse power.  
Fig. 146.—Horizontal Engine, from 4 to 100-horse power.  
Fig. 142.—Portable Engine, from 2½ to 30-horse power.  
Fig. 40.—Gwynne and Co.'s Combined Stationary Pumping Engine.  
Fig. 139.—Turbine Water-wheel, from 1 to 300-horse power.

Fig. 22.—Combined Pumping Engine, all sizes, obtained Prize Medal, Paris Exhibition.  
Fig. 85.—Deep Well Pumping Engine, all sizes.  
Fig. 134.—Water-wheel Pumping Machinery.  
Fig. 36.—Gwynne and Co.'s Patent Syphon Drainage Machinery.  
Fig. 95.—Horse-power Pumping Machinery.

Fig. 86.—Chain Pump Pumping Engine.  
Fig. 48.—Deep Mine Centrifugal Pumping Machinery.  
Fig. 84.—Double-acting Vertical Pumping Engine.  
Fig. 106.—Gwynne and Co.'s Improved Plunger Hand Pump.  
Fig. 43.—Wind Power Pumping Machinery.

Steam Engines of all kinds and sizes, Hand and Steam Fire Engines, Water Wheels, Hydraulic Lifts, Cranes and Jacks, Steam and Water Valves, Hydraulic Presses, Sheep Washing Machinery, &c., &c.

List of Centrifugal Pumps, two stamps. Illustrated Catalogues of Pumping Machinery, six stamps. Large Illustrated Catalogue, with many Estimates, &c., twelve stamps. All post free. Gwynne and Co. have recently effected a considerable reduction in their prices, being determined to supply not only the best but the cheapest Pumping Machinery in the world.

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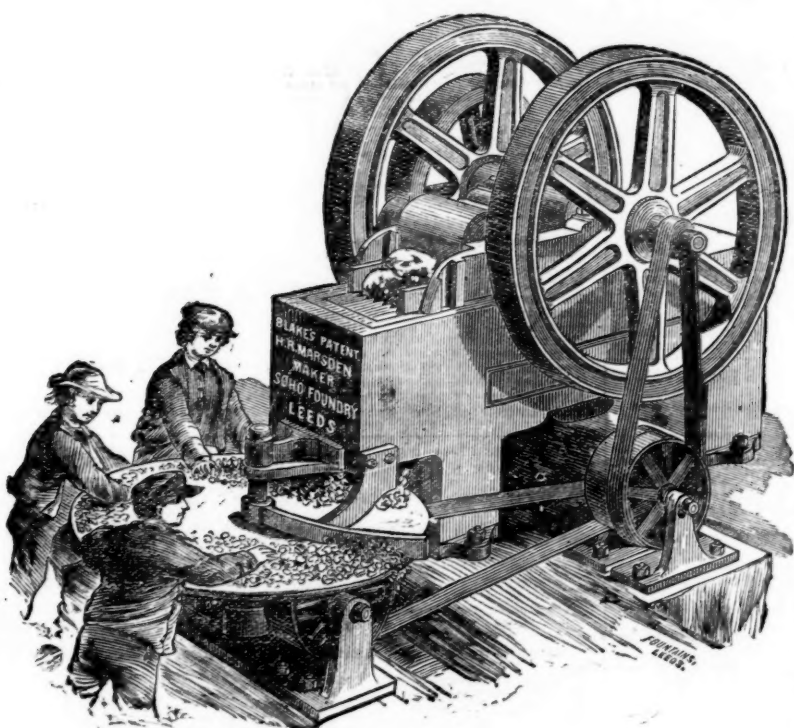
TO MINERS, IRONMASTERS, MANUFACTURING CHEMISTS, RAILWAY COMPANIES, EMERY AND FLINT GRINDERS, MCADAM ROAD MAKERS, &c., &c.

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For the Parys Mining Company, H. R. Marsden, Esq. JAMES WILLIAMS.

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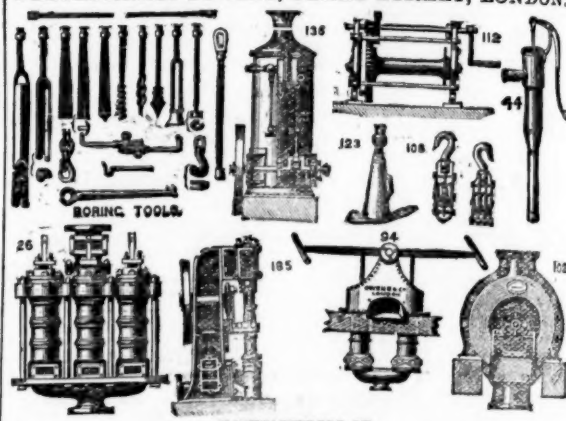
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principals of which are double bow and string girders of best pine timber,

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## THE BRITISH ASSOCIATION.

The fortieth annual meeting of the British Association for the Advancement of Science commenced at Liverpool on Wednesday, and promises to be a most successful one. Prof. Huxley delivered his inaugural address on the following morning, and the several sections, the executives of which are thus composed, afterwards proceeded with the general business of the meeting:—

A.—MATHEMATICAL AND PHYSICAL SCIENCE. In the Crown Court, St. George's Hall.—President: J. Clerk Maxwell, M.A., F.R.S. L. and E. Secretaries: Prof. W. G. Adams, M.A.; W. K. Clifford, B.A.; Prof. G. C. Foster, M.A., F.R.S.; Rev. W. Allen Whitworth, M.A.  
B.—CHEMICAL SCIENCE. In the Royal Institution, Colquhoun-street.—President: Prof. Henry E. Roscoe, B.A., Ph.D., F.R.S., F.C.S. Secretaries: Prof. A. Crum-Brown, F.R.S.E., F.C.S.; A. E. Fletcher, F.C.S.; Dr. W. J. Russell, F.C.S.  
C.—GEOLOGY. In the Concert Hall, Lord Nelson-street.—President: Sir Philip de Malpas Grey Egerton, Bart., M.P., F.R.S., F.G.S. Secretaries: W. Pengelly, F.R.S., F.G.S.; Rev. H. W. Winwood, M.A., F.G.S.; W. Boyd Dawkins, F.R.S., F.G.S.; G. H. Morton, F.G.S.  
D.—BIOLOGY. In the Reading Room and Lecture Room of the Free Public Library.—President: Prof. G. Rolleston, M.A., M.D., F.R.S., F.L.S. Vice-Presidents: John Evans, F.R.S., F.G.S.; Prof. Michael Foster, M.D., F.L.S. Secretaries: Dr. T. S. Cobbold, F.R.S., F.L.S.; T. J. Moore, Cor. M.Z.S.; Henry T. Stalton, F.R.S., F.L.S.; Rev. H. B. Tristram, M.A., LL.D., F.R.S.  
E.—GEOGRAPHY. In the Small Concert Room, St. George's Hall.—President: Roderick I. Murchison, Bart., K.C.B., D.C.L., LL.D., F.R.S., F.G.S. Secretaries: H. W. Bates, Assis. Sec. R.G.S.; Clements R. Markham, F.R.G.S.; Albert J. Mott; David Buxton, F.R.S.L.; J. H. Thomas, F.R.G.S.  
F.—ECONOMIC SCIENCE AND STATISTICS. In the Council Chamber, Town Hall.—President: Prof. Jevons, M.A. Secretaries: Edmund Macarty, M.A.; John Miles Moss, M.A.  
G.—MECHANICAL SCIENCE. In the Civil Court, St. George's Hall.—President: Charles Vignoles, C.E., F.R.S., M.R.I.A., F.R.A.S. Secretaries: H. Bauerman, F.G.S.; P. Le Neve Foster, M.A.; J. T. King, C.E.

In next and subsequent Journals we shall, as heretofore, publish all matters of interest to our readers which may be brought before the Association.

## MINERS' ASSOCIATION OF CORNWALL AND DEVON.

The annual meeting of the Miners' Association of Cornwall and Devon was held in the committee room attached to the Polytechnic Hall. Mr. J. ST. AUBYN, M.P., presided, and there were present Mr. R. W. Fox, F.R.S., the Rev. Salter Rogers, Mr. C. Fox, Captains Husband and Prior, Bryant, Williams, Quentrell, and Williams; Messrs. Argall, Hustler, Pryor, Tonkin, Pryor, Kito, Stephens, Endy, Twite, Bawden, and J. H. Collins, F.G.S., the lecturer and secretary. Prof. Robert Hunt, a warm friend of the association from the commencement, was unable to attend, in consequence of the state of his health, but wrote a letter expressive of his earnest wishes for its success.

The CHAIRMAN expressed his deep regret at the absence of their excellent President, his esteemed colleague, Mr. Pendarves Vivian. It had been Mr. Vivian's full intention to have been present, but unfortunately circumstances had prevented it. He was a gentleman who, from his knowledge and experience in all matters connected with mining, and from his business associations, was peculiarly qualified to fill the office of President; and he (Mr. St. Aubyn) was certain that the loss of the loss sustained by his absence was only equalled by his regret at not being able to attend. The position of their society might be looked at from two points of view—first, as regarded the work it had accomplished and was then doing; and, secondly, as concerned its financial position and future prospects. He was sorry the one was not so good as the other. With regard to its general utility to the country, certainly it was improving from year to year, and was accomplishing more as it got older. During the past year more than 100 had been under instruction; and their progress might be judged by their success at the last examination. From that statement which had been given him by Mr. Collins he found that whereas in 1869 there were 17 who succeeded in mining, this year there were 34. In chemistry last year 24 succeeded, this year 30; in geology there was a slight falling off, the numbers being 7 against 5; in mining there were 1869, 9; in 1870, 7. The total number of certificates gained in 1869 was 49; in 1870, 57. It was evident, therefore, that those who were intended to benefit by the society took advantage of it. There were a great many things that could be done if they only had more money, whereas the society was not supported in the way it should be. To him it was very difficult to understand how this should be in a county like Cornwall, where so many depended upon the manner in which scientific invention was brought to bear upon the producing of raw material for manufacture. The subscriptions were far too small; and wherever they turned they constantly found themselves hampered. During the year the debt of the society would be reduced from 110l. to 100l. If they could get rid of that incumbrance, and obtain subscriptions which would be adequate to their very moderate wants, they would be able to do many things which they were obliged to forego now. One thing that he should like to see done would be the formation of a lending library; which would be of great utility. Upwards of 500 had been spent last year in scientific books, which the members had obtained at about two-thirds their published price. He sincerely hoped that in future the society would receive the support which it deserved, and would, therefore, be the means of doing much more good.

The report of the Council, read by the Rev. SALTER ROGERS, regretted the loss of some of their valued supporters—Sir W. Williams, Major de Clifford, and Mr. E. H. Hawke. The Council were happy to report, in spite of the loss of these and of other subscriptions, a slightly increased annual income. They gratefully accepted the *Mining Journal* offer of four prizes, instead of three, as offered last year, and the promise of a continuation of the offer annually. They also begged to thank Dr. Foster for the repetition of his offer of two prizes for vanning. After a careful consideration of the success of the students at the South Kensington examination, they recommended the following for the *Mining Journal* prizes:—Chemistry, John Foman; mineralogy, Thos. George; mining, George Noble; geology, Hugh Stephens. The first vanning prizes offered by Dr. Foster were awarded to Hugh Stephens and J. Bawden. It might serve to stimulate the energies of the students if special prizes could be offered for competition in some other branches of technical instruction—such, for instance, as naming 100 specimens in a couple of hours with the assistance of a few simple reagents and a knife, making a mechanical drawing, a simple chemical analysis, or naming a set of rocks and fossils, within a limited given time. They would call attention to the fact that 84 passes had been obtained by the students this year, against 57 last year. 14 of them in the advanced examination, and 21 of them in the elementary examination. All the first classes obtained throughout the country in mineralogy were taken by students of the association's classes. The class in geology had been efficiently worked. Upwards of 50 had received more or less instruction in them, and they had obtained between them 56 passes. The Council still urgently urged it upon the landowners and adventurers of Cornwall to give increased support to a work having so important a bearing on the development of the resources of the county, and the improvement of every branch of mining; and especially they would desire to extend and encourage the work of the sub-classes. They hailed with much hope the recent legislation with respect to primary education, the want of which was one of the great difficulties with which the association had had to contend; and they looked forward with increasing hope to a time when the technical information of the Cornish miner in general might rival that of the German. In conclusion, the Council referred with pleasure to the appointment of their excellent and painstaking lecturer to the secretaryship of the Royal Polytechnic Society.

The report was adopted without discussion, upon the motion of Mr. R. W. Fox and Mr. Argall.

The CHAIRMAN then presented the *Mining Journal* prizes, which consisted of handsomely bound books, to their winners; and also Dr. Foster's. Mr. DINGEE read a paper upon his Patent Pulveriser. It consists of four cast-iron round plates 2 ft. in diameter, which revolve rapidly in a round pan 6 ft. in diameter, driven by spur gear and pinion from the outer edge in a contrary direction at about ten revolutions per minute. The pan is made with vertical sides, in which are fixed twelve copper gratings. The machine is fed by means of a screw working in a hopper. It is adapted not only for dusting "rows," but for the pulverising of other ores and substances. It is claimed that it will produce more tin from the same quantity of stuff than the present method.

Mr. CHATWOOD gave an explanation of the Steam Stamp invented by himself and Mr. Sturgeon, which is upon the principle of a steam-hammer, of the moving cylinder type. The hammer or ram, which is also the cylinder, is actuated by the direct action of steam or compressed air, or it may be driven by water pressure direct. The machine thus comprises in itself both the stamper and also the motive power; and it is likewise perfectly self-acting. It is capable of crushing about 50 tons a day, and would, he anticipated, do away with non-dividend mines in Cornwall. (Hear, hear.) One was being erected at Gooch-harrow Mine, near St. Austell.

The CHAIRMAN said they would be delighted to have any machine which would do away with non-dividend mines. (Laughter.) Mr. C. Fox: But Mr. Chatwood would turn them into dividend ones.

The CHAIRMAN: Well, either way, so that we get rid of them. (Renewed laughter.)

Capt. HUSBAND, at the desire of the Chairman, then made a few remarks in explanation of his Pneumatic Stamps, a working model of which is in the exhibition, and has already been noticed. The working stamp-head is 8½ in. over, and with the lifter weighs 240 pounds. It is capable of stamping 10 tons a day, and the saving of power is from a third to a half. It can be worked by a winding-engine, as it is of no consequence in which direction it is driven.

The meeting then adjourned to Messrs. Cox and Farley's, at the docks, where various machines were to be tried. Dingee's Pulveriser was first set to work. It did its duty admirably, bringing down the stuff to a degree of fineness that thoroughly satisfied all the practical men present, and the judges awarded it a first silver medal. The only doubt that seemed to exist was as to the wear and tear, the amount of which, however, can only be decided by experience. Messrs. Chatwood and Sturgeon's Steam Stamp model could not be got in proper action owing to some minor defect, and it was decided that the judges should postpone their decision until they had seen a full-sized one, which is now being erected near St. Austell, in operation. Capt. Husband's hand model of his Pneumatic Stamp, to which a first silver medal has already been awarded, was much admired. Ascheroff's patent Low Water Detector and Alarm was tried, and found to be an unqualified success. A tube is fixed into the boiler at the low-water line. While the tube is filled with water all is well, but directly steam enters a fusible metal plug is melted, and a whistle sounds.

ELECTRO-DEPOSITION OF NICKEL.—The invention of Mr. I. ADAMS, Boston, U.S., consists, first, in the combination with nickel (to be used for anodes) of a metal or metalloidal electro-negative to the nickel in the solution employed; second, in a nickel anode combined with carbon, and cast in the required form.

## REVIVAL OF IRISH MINING.

The existence of enormous mineral wealth in Ireland has never been doubted, yet hitherto comparatively little has been done to secure its commercial development; two or three companies, it is true, are in successful operation, and have long been so, but with the exception of these there is nothing to lessen the complaint that Irish mining is lamentably neglected. The present disturbances on the Continent are considered to offer a favourable opportunity for once more directing the attention of English capitalists to the mines of Ireland, and it is cordially hoped that the successes realised will lead to the extensive introduction of Irish mines upon the lists of dividend-paying securities in the market for investments. The advantage of possessing a property for ever free of either royalty or dead rent can scarcely be overestimated, more especially when that property is favourably situated both for the working of the minerals which it contains and for the cheap and expeditious conveyance of ore and materials. A property considered to be in this favourable position is about to be worked by the Shallee Silver-Lead Mining Company, with a capital of 30,000l., in shares of 10 each; it comprises the East Shallee and Gurtadnyne Silver-Lead Mines, situated near Silvermines, in the county Tipperary, the Great Southern and Western Railway connecting the district directly with Dublin and all the important ports in the South and West of Ireland. By the construction of a siding, for which there is every facility, the ore can be taken directly to the shipping wharves.

The minerals beneath the East Shallee property, 687 acres in extent, are held free of either royalty or dead rent, with unlimited authority to divert water-courses, and with exceptionally favourable conditions as to the acquisition of whatever surface land may be from time to time required. The full value of this freehold title will be understood when it is considered that in the great majority of cases mining properties are held under leases for 21 years only, at royalties ranging from one-tenth to one-twentieth, and are in addition often subject to a heavy dead rent, and that the average extent of such properties is nearly two-thirds less than Shallee. The Gurtadnyne property is held, together with other property, by the said company under a lease, upon favourable terms as to royalty, &c. The great mineral vein is supposed to extend 750 fathoms through the Shallee property, and thence continues through Gurtadnyne. At present this lode is only worked under Shallee in the 16 and 26 ft. levels, the latter the deepest reached, yet more than 60,000l. worth of ore have been raised, and the price per ton realised for it proves the quality to be excellent.

The property at present belongs to the General Mining Company for Ireland, and the work which has been done is really only that which was necessary for exploratory purposes; the plant and requisite machinery have now been placed on the mine, and are shown by the inventory to be worth 6500l., so that the new company will virtually take the mines as a going concern. The property of the General Mining Company for Ireland is too large to be fully developed without the aid of more capital than is at present conveniently available, and the directors of that company, being reluctant to ask their shareholders to contribute the necessary funds, and being equally unwilling to allow part of their property, which has given such evidence of its productiveness as the East Shallee Mine, to lie comparatively speaking, idle and to remain undeveloped, while other and less promising lodes are being made to yield large profits to their owners, have entered into a preliminary agreement to convey to the Shallee Silver-Lead Mining Company all their interest in the mine, with the working plant, machinery, and buildings, and also all their interest in the Gurtadnyne Mine, for the sum of 15,000l., of which they propose to take one-half in fully paid-up shares, thus retaining a substantial interest in the success of the new undertaking. When it is remembered that the value of the plant and buildings alone is over 6500l., it will be seen upon what moderate terms this company is acquiring the valuable silver-lead mine in full working order.

The great lode of the district to which reference has already been made, can be traced for over three miles in a south-east and north-west direction, and has many north and south off-shoots, which at Shallee have proved very valuable. The lode itself is composed of siliceous rock and quartz, with in many places deposits of sulphate of barytes, and mixed throughout with ore. After a careful inspection of the mine, Capt. James Nancarrow expresses his conviction that the property is a most valuable one, and that if worked with spirit it cannot fail to pay the shareholders well.

The report of Mr. Thomas King, of Killaloe, upon the property is equally encouraging. About 4 fathoms south-east of Connolly's shaft, the great lode has, he says, been cut near the surface, and is largely mixed with lead, and of size unknown; indeed, it is a mass of highly-mineralised rock, containing from 12 cwt. to 1 ton of lead per cubic fathom. The men are now working on it at 8 to 10 fathoms from surface, under the most disadvantageous circumstances; still he considers that, even under these disadvantages, each man ought to raise 1 ton of lead per month, which would be equivalent to 4s. 6d. in 1l. On a careful consideration of all the circumstances connected with the great lode—the position of the mine, the nature of the lode, its productiveness, its richness for both lead and silver—the great improvements it shows in the bottom level, and the facility by the different shafts for properly opening up the mine, with the advantages possessed in having thorough good machinery for both lifting the ore and making it marketable, consisting of two good steam engines, a superior stone-breaker, crusher, and 32 heads of stampers, with the best dressing machinery that modern science or practical skill can produce, he feels no difficulty in stating that the East Shallee Silver-Lead Mine holds out promise of being one of the best mines in the Kingdom.

The position of the lead market could scarcely be more satisfactory to the mine adventurer than at present, and the new company will certainly have a great advantage in being able to send ore to market at once, and thus secure material assistance to the floating capital account from the cash returns, whilst the position and commercial experience of the officers will afford an ample guarantee that the company's business will be well conducted.

## LIABILITY OF PAST SHAREHOLDERS IN COST-BOOK COMPANIES.

## IMPORTANT JUDGMENT OF THE VICE-WARDEN.

This is a case of liquidation, by an order made under the Companies Act 1862. The order was made not long after the passing of that Act, and relates to a company not formed by incorporation under that Act, but long before it, in the ordinary form of a so-called "cost-book mine" company, being a mining partnership or company within part 8 of the Act.

I do not find that there have been any special written regulations, which distinguished it from cost-book companies of the common type.

The official liquidator made, as is usual in the courts above, a list with two classes of contributories—Class A, of present shareholders, and Class B, of past shareholders, who had ceased to be shareholders, either by *bona fide* transfer or by relinquishment, according to custom in such mining companies.

It so happens that the entire claims of all creditors have been levied by calls on, and wholly paid by, the present shareholders or contributories of Class A.

It is assumed that the transfers were all made regularly and without fraud. In two cases only the shareholders had retired by resigning their shares to the rest of the company. The great majority of cases were cases of transfer to vendees of their shares.

In ordinary cases this would terminate the liquidation, unless an adjustment as between contributories should become necessary.

Now, the question pending before me is in substance this—whether the present shareholders who have paid all the debts have any claim upon past shareholders to be repaid any part of those debts, in respect of expenses of working the mine during the time when the past shareholders actually held the shares, but had not paid, or been called upon to pay or contribute, any share of such expenses. In dealing with the liquidated companies not formed under the Companies Act 1862, this Court, unfortunately, cannot look for much assistance from any recent decisions of the superior Courts, for they almost exclusively relate to companies incorporated and registered under that Act; whereas the number of mining companies that come under the cognizance of the Statutory Court constitute at least two-thirds of the whole number of mining companies in the two western counties.

In Mr. Lindley's useful work the information on this class of companies is necessarily very scanty. The reported cases relating to them are chiefly collected in book 1, chap. 2, book 2, chap. 2, book 3, chap. 4, book 4, chap. 3, div. 1, sec. 2. In none of these reported cases (so far as I recollect) are any to be found in which the relative position or equities of present and past shareholders of such companies on a question of adjustment, *inter se*, have been defined or even discussed.

Under Section 200 of the Act, any person who is liable at law or in equity to pay or contribute to the payment of any debt or liability of the company is deemed to be a contributory. Therefore any existing shareholder who was personally liable as such to a creditor for goods, &c., supplied, became a contributory within this definition when the order to wind-up was made; but whether this liability to be a contributory, and so to aid in the payment of debts by subsequent shareholders, will continue after the shares have been *bona fide* transferred to others is another question.

It may be that a creditor not a member of the company may continue to hold a shareholder liable to an action for his debt though the debtor may have got rid of his shares; but it does not follow that a person who has afterwards become a shareholder can hold such past shareholder liable for debts incurred in the time when a solvent company or an official liquidator has called upon the new shareholders to pay.

In a common partnership, not dissoluble at will, but only by common assent, such an adjustment is reasonable and proper; but where, as in a company like the present, an unqualified right of transfer is the admitted custom of this sort of partnership, the custom would be nugatory unless the discharge of past shareholders be complete as between him and the future shareholders, or any of them.

It is contended that, under Section 33 of the Act, past shareholders are contributory if they cease to be members of the company within a year before the winding-up; and if the contributories of Class A are unable to pay all the claims. By a sort of analogy to this provision it is contended that the like obligation should be incumbent on past shareholders in favour of Class A.

The answer to this is that, even if Section 33 be applicable in this case, the present or existing shareholders have, in fact, satisfied all the claims of the creditors; but, in my opinion, Section 33 is solely applicable to registered companies formed under the Act.

It is true that the language of Sections 199 and 204, part 8, seems strong enough to import into the construction of the Act all winding-up provisions contained in the other parts of the Act, whether they relate to registered or unregistered companies; but I conceive that such is not the effect of these sections, which must be taken to relate only to unregistered companies, to which they seem to be in terms confined, and not to companies formed on a different principle; and that part 3 was not designed to alter the existing law of common law companies, whether cost-book companies or not.

Upon the whole, there does not appear to me, on the present state of facts, to be any ground for enjoining the liquidator to attempt to warrant the liquidator in calling upon past shareholders to continue to contribute towards the payment of the calls, by which the liquidator has, in fact, satisfied all the debts of the company out of the pockets of the existing shareholders.

This decision, so far as my judgment is concerned, the only point on which the case was originally argued before me in the latter part of last year.

At the last sittings, in the present year, the parties appeared before me, with the official liquidator, by whom the principle on which he had founded his so-called "adjustment" was explained. On this occasion I was first informed of some additional facts in respect of some of the shareholders who were called upon to repay those of Class A.

In the first place, it appeared that out of the whole number of shareholders who had got rid of their shares all except two disposed of them by transfer to other incoming members, and these two had resigned them to the rest of the company.

What were the terms or conditions of the relinquishments does not appear by any evidence before me. It may possibly turn out that some rights may have been then claimed by the outgoing shareholder against the company, or by the company against the outgoing shareholder, which the rules or customs of this company may have sanctioned; and it is possible that the position of these parties may be thereby altered, and be the foundation of some different form of claim. If not, then I think it makes no difference whether the shares have been parted with by transfer or relinquishment; and my judgment will then apply to both cases indifferently.

Another fact also appeared on the last-mentioned occasion which did not appear on the original hearing—that some of the shareholders, who had been so called upon by the liquidator to reimburse the present shareholders in respect of the debts of the company which had been incurred before they became present shareholders, were themselves, and had always continued to be, shareholders, until the order to wind-up was made; so that the relative position of past and present shareholders does not exist between them. All were, in fact, present shareholders, though some had been shareholders longer than others.

This state of things appears to have been occasioned by the fact that calls had been made by the company before the rest of the existing company had taken shares by transfer, which calls were not sufficient to pay all the then current debts of the company.

The liquidator thought that these shareholders, though they had never ceased to be shareholders, should also be charged with so much of the previous overplus of current expenses which were not covered by their contemporaneous calls—in fact, these later shareholders had been obliged by call of the Court to pay some of the old debts of their co-contributors, and, therefore, thought themselves entitled to indemnity from the shareholders who were of longer standing than themselves.

The practice of making calls far short of their debts is so common among ill-managed companies as to be no surprise to me. The managers like to conceal the extent of their real debts, and prefer relying on the loans of a country banker to alarming their co-adventurers by heavy calls.

There ought to be no difficulty, in consequence of this state of things, when the company is under liquidation. The debts, and credits, and property of such a company, whether incorporated or not, pass with the company for better or worse, and with the implied obligations of their members (as between themselves or co-contributors) to pay off all unpaid debts whenever incurred.

I do not see how a company of transient shareholders, with transferable shares, can avoid this, or be worked or wound-up at all, without submitting to these consequences. It is idle to expect that companies, with shares negotiable *ad libitum*, are to be treated as if they were ordinary continuing partnerships. The Court is bound at once, after collecting all debts, and all unpaid calls existing at the time of the order, to make new calls on existing shareholders, *pro rata*, in respect of their several constituted shares or interests in the mine; and cannot treat each shareholder differently, according to the time for which he has held his shares, or the relative expense of working during such time, and the amount must depend on a comparison of existing assets with the total unpaid claims of the creditors.

Nor is there any hardship in this. A rational man who buys shares in a mine ought to make himself acquainted with the state and prospects of it, and of the existing debts of it; and the local laws of the Stannaries afford some facility for doing this. If he neglects to do this he has nobody to thank for these unforeseen difficulties or hardships but himself.

The two last facts—the occurrence of two cases of relinquishment, and the fact that some 20 shareholders, charged by the liquidator in aid of the rest of the existing shareholders, are themselves also on the list of Class A, I think I ought, if required, to hear either of those points regularly argued before the Court, on due notice at next sittings. But so far as regards the main decision in this matter—the relative rights and obligations of past and present contributories, on the matter of adjustment—my judgment is to be regarded as final, except on appeal to the Lord Warden.

In regard to this last-mentioned application, I direct that it may be dismissed, but without costs; and that the costs of the official liquidator be paid out of the assets of the company, as well as the costs of such of the past shareholders as appeared by their solicitors to oppose the present application.

## THE TERRAS TIN MINE—SPECIAL REPORTS.

## REPORT OF PROFESSOR WHITE.

SIR,—Having noticed the various and conflicting opinions relative to the Terras Mine, I experienced considerable satisfaction in being engaged to inspect the property, to select the ore from the points presenting peculiarities, and to submit the samples to assay in such a manner as, in my judgment, would yield a fair average of the quality. I took out four samples from the north and south elvan courses, averaging 4.5 per cent. This stuff was being quarried in stoping the ground now being cleared for a contemplated tramway, which will most materially facilitate the ulterior progress of mining operations. The quantity appears to be inexhaustible. This tramroad is opened upon the elvan some 35 ft. (about) above the level of the sea, and the ore is a fine-grained, siliceous, iron, both protoxide and peroxide, in various degrees of decomposition, which appear to extend fairly through the surface, and presenting an appearance of stanniferous wealth extremely analogous to the ground encompassing some of the most successful mining sets in the locality (St. Austell). This favourable indication is yet more evident in the fact of the ground also carrying copper, which most frequently accompanies tin. Of this substance, and of one of its constituents (cobalt), I obtained some interesting specimens to exhibit in my laboratory. In the meanwhile, knowing the prejudice entertained against the existence of wolfram, I searched for this mineral most assiduously, but could not succeed in discovering a trace of it. Of elvan courses, equal in extent, several appeared to be traversing the set, and all having the same bearing nearly, but not ascertained to be stanniferous. Though not sufficiently an adept in mining operations to express an opinion *ex cathedra*, I cannot avoid being impressed with the conviction that in depth the present proportion of iron must yield to a marked increase, and that the ore, as it is, is a fine-grained, siliceous, iron, which has hitherto been the result of deeper cuttings, not only on this property, but in others bearing the same appearance in superficial working. It is, however, to the lodes, running within 4 degrees of east and west attention must be directed for richness of quality. Upon one of these lodes (Edwards's) a shaft has been sunk, and is satisfactorily progressing. At a depth of 13 fathoms a strong lode has been discovered, and from it very rich ore brought to grass. It would be premature to speak of this lode except in terms of anticipation. It promises well, and as there can be no reasonable doubt as to a continuance of its richness, a fair and legitimate expectation may be fostered of a vast improvement in the already flattering character of the ore raised. These anticipations being, as no doubt they will be, fully realised, there remains for the proprietors, present and future, the prospect of the Terras Mine yielding returns and dividends which will vie with those of the neighbouring mines, which returned tin to the value of 500,000l. Though not wishing to lay stress upon any apparent fortuitous circumstances, I cannot, in justice, avoid reference to an incident which tended not a little to impress me, as it may do others, with the opinion of the Terras Mine. As "the opinion of the swallow makes a summer," neither, it may be contended, will the discovery of a stray specimen constitute a rich mine, still the unit in each case is indicative of others, *qui generis*. I picked up near the mouth of an opening a large and very fine shodestone of tin ore, of which I append the assay, marked No. 6. In venture, in conclusion, to repeat in a collected form the result of my assays, and to append a statement of the quantity of peroxide of tin per ton of ore that I obtained from each specimen:—No. 1, 3.9 per cent.; No. 2, 6.1 per cent.; No. 3, 4.3 per cent.; No. 4, 4.5 per cent.; these were all obtained from the elvan course in the process of quarrying north and south. No. 5, 10.2 per cent.—running from Edwards's lode, east and west; No. 6, 28.4 per cent.—the node stonereferred to. No. 1, 813 lbs. troy per ton; No. 2, 166 lbs.; No. 3, 117 lbs.; No. 4, 163½ lbs.; No. 5, 177½ lbs.; No. 6, 773½ lbs. Or by avoirdupois weight—No. 1, 61½ lbs. per ton; No. 2, 124½ lbs.; No. 3, 87½ lbs.; No. 4, 122½ lbs.; No. 5, 208½ lbs.; No. 6, 579½ lbs. These calculations are based upon troy weight; I give also the result in avoirdupois.

W. WHITE, Professor of Chemistry and Assayer.

Laboratory and Assay Office, Crown-court, Threadneedle-street, Sept. 14.

## REPORT OF GEORGE HENWOOD, M.E.

SIR,—I have made a complete survey of your mining property, and now hand you my report thereon. I have on many previous occasions had to visit this locality, having managed some tin mines in the immediate neighbourhood. I shall first treat on its geological features, which are important. The lodes, of which eight are known to exist as east and west veins, are embedded in the clay-slate or kyllas of the Cornish mines, near its southern junction with the great central boss of granite forming the St. Austell range; this granite has been successfully wrought during ages for tin, especially on the southern slope in the kyllas. Under precisely similar conditions to the Terras Mine many tin sets have been productive of large returns, yielding vast wealth to their fortunate proprietors; amongst others may be mentioned the Great Hewas, Polgooth, Douglas, and a host of others. These mines are in proximity to the Terras. At a greater distance on the east, but under the same geological conditions, are the East and West Orsels, United, Far Gossels, Fembroke, Fowey Consols, &c., whose riches have been so great as to become proverbial.

On the west the same natural conditions present the same phenomena, and are held in high estimation. The Terras Mines are literally surrounded by mines mostly tin-producing; indeed, every bottom or bed of a rivulet in the locality has been strewn for tin in ancient times, the yield from which, no doubt, originated in the backs of lodes situated as are those of the Terras, ample evidence of which is afforded by examination *in situ*.

The clay-slate constituting the strata of the set is traversed by numerous east and west as well as easterly and westerly veins, most of which contain tin ore. The district is also somewhat peculiar, from the presence of elvan dykes, proceeding, no doubt, from the granitic range; these are found at the Douglas, Hewas, and St. Austell Consols. The elvan dyke at the Terras, 30 feet to 40 ft. in width, is highly stanniferous, as is proved by actual daily practice; it runs nearly due north and south through the entire set, and dips slightly east; the east and west lodes have very little underlie north; they form junctions with this great elvan, and if reason, analogy, and experience go for anything, at or near these intersections bunches or rich deposits of tin ore may confidently be calculated on.

Elvans are not always stanniferous. This dyke, however, rare, does not constitute the only example. Several of our richest mines for tin have been worked in this rock. The mines above quoted have all been prosecuted to great depths, thus forming excellent precedents for the Terras Mine. The works on the mine hitherto executed by the present proprietors have been principally confined to the elvan dyke, and the clearing up of shafts and old workings on the east and west lodes. A new lode, now called the engine lode, was accidentally cut in clearing dykes, chlorite, peach, gossau, oxide of iron, and kyllas, with rich grains and veins of tin ore throughout—a rich lode; and on the north is a very large lode, on which the old men worked the backs for more than half a mile in extent, the



Mr. T. R. COMSTOCK stated that having recently visited the mine, and also having had it inspected by one of the greatest mining engineers of the day, he was of opinion that the works already commenced, and which the report shows are being carried on with great vigour, could not fail to result in making this one of the best tin mines of the county. It was his property that almost anyone could predict a great future of, from the fact that the old workings on the surface, which have exhausted thousands of tons, would never have been done had the prospecting parties of tin been got from them, and that the present workings seem to verify this opinion in the most positive manner, seeing that the lode now being driven on is worth 25¢ per foot in each end. Having all along felt every confidence in its success, and his friends had already taken a large interest in the mine, he would continue to advise others to do the same. —A SHARPLESS asked if the East Lovell















uncondensed steam into the boiler by rotary or any other pumps, or by back pressure on the piston of the motive power engine through a small valve about one-quarter or one-third the area of the steam-pipe. The inventors prefer to use a rotary engine as a motive-power to give motion to the pumps used, for the purpose of returning the uncondensed steam into the boiler.

**EXPORTS OF RAILWAY IRON.**—The exports of railway iron made from the United Kingdom to Russia experienced some decline in July, but there was a considerable increase in the shipments made to British India and the United States. The whole exports of railway iron from the United Kingdom in July amounted to 106,892 tons, against 103,938 tons in July, 1869, and 37,516 tons in July, 1868. In the seven months ending July 31 this year railway iron was exported to the extent of 669,601 tons, against 519,722 tons in the corresponding period of 1869, and 334,058 tons in the corresponding period of 1868. The largest share of these exports sustained by any one country was contributed by the United States (238,540 tons); Russia came next with 140,548 tons, and British India next with 113,564 tons. The demand for our railway iron appears to have fallen off this year in Sweden, France, Egypt, Peru, and Australia; but it increased in almost every other part of the world. The value of the railway iron exported in July was 917,521*l.*, as compared with 855,175*l.* in July, 1869, and 300,344*l.* in July, 1868; and in the seven months ending July 31 this year 5,435,143*l.*, against 4,126,498*l.* in the corresponding period of 1869, and 2,614,606*l.* in 1868.

**NEW VICTORIA (South Devon) MINING COMPANY.**—Favourable reference was made to this undertaking when it was introduced to the public, and since then most satisfactory progress has been made with the preliminary operations, with the view of extending the development of the property upon a scale compatible with its merits. According to the testimony of a well-known practical authority as to the position of the mine, and judging of its future prospects from the character of the lodes as now opened on at the several bottom levels, the plant and pitwork being in good working order, its present value is estimated at not less than 30,000*l.* The operations now in progress are the clearing of the 88 fm. level and the levels above, which it is calculated will be accomplished by the end of the month. The 5000 shares agreed to be offered to the shareholders are being rapidly absorbed. The company is divided into 14,000 shares of 1*l.* each.

**ROCHE CONSOLS.**—The discovery reported at this mine is turning out a very rich one. The agent reports that he has now laid open some exceedingly rich work. The mine is to be vigorously developed. An engine has been purchased, which it is intended to erect forthwith, and stamping will commence as soon as it is set to work.

**LIANARON.**—This company was formed for the purchase and working of the eastern part of the Old Nant Mines, which is at a distance of eight or nine miles from Mold. In addition to the continuation of the rich Nant lodes, one of which is very large, and has returned lead of the value of more than 2,000,000*l.*, it has one of those extraordinary horizontal deposits, which in the locality are not unfrequently most productive, this one having returned profits amounting to about 250,000*l.* in three or four of the adjoining mines, to which it extends. On this deposit or "flat" sinking has been carried on for some time, and it is now being fairly opened upon at a depth of about 44 fathoms, with all the indications of large deposits of lead being at hand. On the large lode a shaft has been sunk to a depth of 92 fms., through rich ore ground, and it is proposed, upon sinking through the "flat," to resume the working at this point, which, it is believed, cannot fail to be profitable. Tributaries, in fact, are already clearing the adit and 25 fm. levels, where good arches of the lode are met with, and some rich lead is being broken. Unwrought ground is near, from which the water is drained without machinery. The engine, dressing-floors, buildings, &c., are in good order, and adequate to any active workings upon a considerable extent, and the mine presents every promise of becoming at an early date a profitable undertaking.

**GREAT ROYALTON.**—A great improvement has taken place at this mine. The King's lode has been cut rich at a depth of 10 fathoms from surface, 20 feet wide. The agent's report will be found in another column. The engine and stamps will be set to work at the end of the present month, and sales of tin will commence. The agent states that the supply is practically inexhaustible.

**FLORENCE AND TONKIN UNITED.**—The prospects of these mines appear, from the reports submitted and statements made at the recent meeting (the resolutions of which are published in another column of this day's Journal), to be excellent. Capt. Wm. Verran remarking that, looking at the prospects in the western part of the mine for copper and lead, and the certainty of tin in the Tonkin, or eastern part, with so much of the heavy work—such as sinking shafts, &c.—already done, he considers they are justified in looking for speedy and permanent success, such as shall amply reward the shareholders, and be a great boon to the neighbourhood. The winze at the bottom of the deep adit level in advance of the western end at the 35 is now worth from 2 to 3 tons of copper ore per fathom, with every promise of opening up a very valuable piece of mining ground. Capt. Thomas Foote strongly recommends pushing all the levels west of Saw's shaft for copper, the 35 south for lead, and the 45 south as soon as the lead lode is reached, as he is fully persuaded that by so doing this will prove a good and lasting property.

**EAST LOVELL.**—It will be seen by the report that "the mine continues to look very well." Importance is attached to the satisfactory result attending the development of the western ground.

**GENERAL BRAZILIAN.**—This company was formed about two years since, for the purpose of acquiring an important series of mines, situated in the best gold mining district in Minas Geraes. Like Taquaril and Don Pedro, they had remained in abeyance for many years, from want of adequate capital and skill to continue their development. The formation being jagged in almost each instance, the rich lines or shoots of gold were followed down to water level—described by Capt. Thomas Treloar as "the Brazilian stopping point." At some of the mines correct accounts of produce and cost were kept, but at others it has been found impossible to collect any reliable information. It is found that four of the mines yielded 540,696 oits. of gold, of which 168,000 paid the cost, thus leaving a profit of 372,696, or 222 per cent.—in other words, the total produce amounted to about 230,000*l.*, the cost to 71,400*l.*, and the profit to about 158,600*l.* Capt. Thomas Treloar has stated that this company possesses a colossal extent of property, and will, in his opinion, realise colossal returns and profits. As to the latter, he says, that "seeing the lines or shoot of gold in all the mines became very rich as they approached and reached water, it seems that the great deposits of the precious metal are only formed within the active influence of this element." This circumstance, coupled with the great extent of unexplored ground in such a locality, warrants Capt. Treloar in expecting that "the profits will amount to millions sterling." It will be seen by the advices, which appear in another column, that Captain Treloar informs the shareholders that the operations generally have proceeded satisfactorily, and that gold will come by-and-by in such quantities as will not fail to be gratifying.

**PACIFIC.**—The directors have succeeded in securing a claim of 1600 feet as an extension of the Lander Hill Silver Mine. The report appears in another column.

**TACUARIL.**—As indicated in last week's Journal the first remittance of gold, amounting to 1509 oitavas, came to hand by the mail on Wednesday. The advices, which appear in another column, are of the most encouraging character. The result of recent development warrants Capt. Treloar in asserting, with every degree of confidence, that "Taquaril has indeed a brilliant future in store." Several rich veins, varying in thickness from 2 inches to 3 feet, and in width from 3 inches to 6 feet, as well as a bed of auriferous jactings, have been met with; and nearly all the crushed matter removed from the old workings (about 75 tons) shows gold—a circumstance which augurs well for the general yield of the lodes. Capt. Treloar states that should the works now being vigorously prosecuted continue with dispatch, there is every reason to expect the whole will be accomplished by the end of October, and long before the end of the year the mine will be working at considerable profit. Calculating that the residue of the 75 tons above referred to contained the same average percentage of gold as that yielded by the 6 tons treated, its value, at 3*l.* 10*s.* per ounce, would be about 4830*l.*

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Prof. Smyth's Lectures at the Royal School of Mines—Meeting of the Iron and Steel Institute—"Perpetuum Mobile," &c. (H. Direks)—Foreign Mining and Metallurgy—Foreign Mines Reports—Patent Matters—Original Correspondence: Coal Mining in the County of Durham; Truck System; Great Maritime Ship Canal (F. A. Owen); Signalling by Means of Electricity (E. Gledhill); Transfer of Power, the Accumulator System (*illustrated*); Mining in Old and New Districts (A. Bennett); Science in Mining, and Old Treburgett; Taquaril Gold Mine, and its Management; Florence and Tonkin United Mines; Northern Silver-Lead and Blende Mining Company; the Queen Mine, &c.

## The Mining Market; Prices of Metals, Ores, &c.

METAL MARKET—LONDON, SEPT. 16, 1870.

COPPER.		IRON.	
Best selected .. p. ton	72 0 0-73 0 0	Bars Welsh, in London	7 6 -
Tough cake, and tile	70 0 0-71 0 0	Do, to arrive .....	7 5 0 -
Sheeting & sheels ..	73 0 0-74 0 0	Nail rods .....	7 10 0 -
Boils .....	75 0 0-76 0 0	Do, Stafford in London	8 5 0-9 0 0
Bottoms .....	76 0 0-77 0 0	Do, ditto .....	8 0 0-9 0 0
Old .....	63 0 0-64 0 0	Hoops .....	8 15 0-9 0 0
Burra Burra .....	70 0 0-71 0 0	Bars .. at works ..	7 15 0-8 0 0
Wire .....	0 0 10-0 0 11	Hoops .. ditto ..	8 2 6-8 5 0
Tubes .....	0 0 11-0 0 12	Sheets, single .....	9 10 0-11 0 0
BRASS.		Pig No. 1, in Wales ..	3 15 0-4 5 0
Sh.ets .....	8 4 0-8 5 0	Refined metal, ditto ..	4 0 0-5 0 0
Wire .....	7 4 0-7 5 0	Bars, common ditto ..	6 15 0 -
Tubes .....	10 0-11 0 0	Do, mch. Tyneer Tees	6 10 0 -
SPELTER.		Do, railway, in Wales	7 0 0-7 5 0
Yellow Metal Sheath ..	8 4 0-8 5 0	Do, Swed. in London ..	9 15 0-9 17 6
Sheets .....	8 4 0-8 5 0	To arrive .....	9 15 0 -
ZINC.		Pig No. 1, in Clyde ..	2 12 0-3 0 0
Foreign on the spot	418 0 0-18 10 0	Do, f.o.b. Tyneer Tees	3 6 -
Do, to arrive ..	None.	Do, Nos. 3, 4, f.o.b. do.	2 6 6-3 7 0
TIN.		Railway chairs .....	5 17 0-6 0 0
In sheets .....	£24 0 0-	Do, spikes .....	11 0-12 0 0
QUICKSILVER (p. bottle)	8 8 0	Indian Charcoal Pigs,	
LEAD.		In London, p. ton ..	6 5 0-6 10 0
English blocks ..	£123 10 0-124 0 0	STEEL.	
Do, bars (in brls.)	125 0 0-	Swed., in kegs (rolled)	13 10 0-13 15 0
Do, refined .....	128 0 0-	Do, (hammered) ..	14 5 0-14 10 0
Do, Banca .....	126 0 0-	Ditto, in fagots ..	15 10 0 -
Straits .....	124 0 0-	English, spring .....	17 0 0-23 0 0
TIN-PLATES.		LEAD.	
IC Charcoal, 1st qua.	1 5 0-1 8 0	English Pig, com.	18 10 0-19 10 0
IX Ditto, 1st quality	1 11 0-1 13 6	Ditto, L.B. ....	19 0 -
IX Ditto, 2d quality ..	1 6 -	Ditto, W.B. ....	20 10 0-21 0 0
IX Ditto, 3d quality ..	1 12 6-	Ditto, sheet .....	20 10 0-21 0 0
IX Coke .....	1 2 6-1 3 6	Ditto, red lead .....	21 0 -
IX Ditto .....	1 8 6-1 9 6	Ditto, white .....	22 0 -
IX Canadaplates, p. ton	13 10 0-14 10 0	Ditto, patent shot ..	23 0 -
Ditto, at works .....	13 0 0-14 0 0	Ditto, Spanish .....	15 0 0-

\* At the works, 1*s.* to 1*s.* 6*d.* per box less.

**REMARKS.**—The pause in events occurring on the Continent appears to exercise a corresponding influence in commercial circles in London. Men of business have maps of the war in every form and shape spread out before them, instead of day-book and ledger, and apparently are much more interested in tracing the movements of the troops, and considering the prospects of peace, than the desirability of investing further in metals, or realising the stake they may already hold. If asked what business they are doing, the almost invariable reply is, "Looking on." And surely there is sound wisdom in acting thus. A purchase or sale which to-day may seem to present great advantages may to-morrow appear in a very different aspect. The political and commercial interests of a great nation, circumscribed as England is, are so intimately combined, and her ramifications with the civilised world are so many and various, that it is impossible for a war of such magnitude as is now raging between two of the most important countries in Europe not materially to affect the commercial as well as political horizons of our own land. The suggestion advanced some weeks ago was, perhaps, self-evident, but it has proved to be that upon which the public are acting—to keep all business transactions within the narrowest limits, and as much as possible simply "look on." The Bank rate is again reduced—3 per cent. is the minimum quoted since Thursday last, but such is the plethora of money that day to day loans on Consols could be readily obtained at about 2 per cent. With money so cheap, and the resources at the centres of our national industry unimpaired, there is every ground to hope that with the restoration of peace there will be a gradual resuscitation in business, and it may be that the year will close upon us with a brighter prospect for the future than we had ventured to anticipate so long as disturbing elements on the Continent were thought to be looming in the distance.

**COPPER.**—A telegram announces 5900 tons chartered at Valparaiso for the month ending August 17. Other telegrams announce 1135 tons, composed as follows:—900 tons bars and ingots, and 235 tons furnace material, as comprising the charters for the fortnight from August 3 to 17. There has been very little doing, and consequently not much change to report in quotations. The market for manufactured closes very quiet. Chili bars, 63*l.* 10*s.* to 64*l.*

**YELLOW METAL.**—A limited business has been done at 6*d.* for sheets, and 7*d.* for sheathing, the terms of discount for prompt being analysed at 2½ per cent. for the former, and 5 per cent. for sheathing.

**IRON.**—Scotch pigs are quiet. Quotations have improved since our last from 51*s.* 3*d.* to 51*s.* 9*d.* A further decrease of 5660 tons is reported as having taken place last week in the shipments, compared with those in the corresponding week of last year, making the deficiency for the present year to amount to 35,988 tons. From the Welsh districts we learn that there is a present fair amount of business doing. Makers took advantage of the opportunity when it presented itself of booking orders on ahead, so that hitherto the outbreak of war has not had a sensible effect upon the works. But it is beginning to be felt that old standing orders are being worked out, and that no new orders of any magnitude are coming in, so that a period of slackness may be anticipated. So far as regards shipments to the Northern ports of Europe and America, the season is fast drawing to a close, and it is very improbable that further orders for execution this year will be sent forward. The prospects for the winter must very much turn upon the course of events on the Continent. Should peace be proclaimed and established, it is expected that a variety of orders will be given out on continental account, which are only held back because of the war, and upon the establishment of peace much iron, as well as other minerals, will be required to repair the mischief caused by the war. The limited enquiry for Swedish iron, reported last week, has pretty nearly ceased. Staffordshire remains inactive, but prices have not undergone any visible change.

**LEAD.**—For some little time there has been a slackness in demand for this metal. Buyers' attention has been directed towards the beligerents, for the course of this market would necessarily be materially influenced by the course of the war, because with the probability of peace which from time to time presented itself lower prices, it was thought likely, would be accepted; while, on the other hand, a continuance of the war would in all probability render sellers increasingly unwilling to make any concessions. The tendency of the news during the last week has been of such a character as in a great measure to dissipate the hopes which have been entertained of the speedy establishment of peace; still, however, buyers are reluctant to believe in the continuance of the war, and refrain from purchasing until events shall develop themselves more clearly. In the meantime, there exists so much uncertainty as to the future course of events that sellers are unwilling to make sales at what may prove to be upon disadvantageous terms; the consequence is that but little business is transacted at the moment.

**SPELTER.**—This market has undergone no change since last week. What few transactions have been reported have been at 18*l.* per ton. The supplies in warehouse are abundant, so that the market is consequently apparently easy. So long as the war may last there will continue to be great uncertainty regarding the future of this metal. If the Prussians should continue the war the result must tend to improve the value of this metal, inasmuch as holders will become increasingly unwilling to part with their stocks except at higher prices. **TIN.**—All descriptions are easier. English block has been sold at

123*l.* 10*s.*, and it is not improbable that for good orders a lower quotation might be accepted. A slight reduction has also taken place in the value of foreign, sales in small lots of Straits having been made at 124*l.* per ton.

**TIN-PLATES.**—There is a limited demand, and the market is easy at current quotations.

**IRON TRADE.**—(Griffiths' Weekly Report).—The inactivity of the market for all kinds of iron is more apparent during the last fourteen days, general orders for the Continent being withheld for the present, and the orders for Russia, which are uniformly pressing at this season for the Baltic ports, are comparatively small and less numerous than they were this time last year. The iron trade manifests at this moment, through a general scarcity of orders, from causes which we may fairly expect to see intensified as the war progresses. All railway communication with Paris, Lyons, and Marseilles being now closed, the same may be said with regard to Switzerland, both routes, via Lyons and Macon, being cut off by the invading hosts of Prussia. In the early part of the week some hope of a speedy restoration to peace was entertained in the City, but the attitude assumed by the transient Government of Paris appears to confirm the conviction now gaining ground, that the street Government will prolong the struggle at a further enormous sacrifice of human blood, and the partial destruction of the beautiful city of Paris. With two-thirds of the French army destroyed or taken prisoners, the remaining third closely besieged under Bazaine at Metz, Strasbourg bombarded day and night, expecting to be stormed every day, the Emperor a prisoner at Wilhelmshöhe, a Government of irreconcilables ruling under the empire of the mob at Paris, presents a most heart-rending picture, affording painful contemplations for the sincere friends of our gallant neighbours, having reference both to the future and the past.—75, Old Broad-st., E.C.

**COPPER TRADE.**—Messrs. J. Pitcairn-Campbell and Co. (Liverpool, Sept. 15).—The copper market continues to drag on without animation, the demand being almost entirely confined to English consumptive purposes. The actual export of fine copper from Chili for the six months ending June last showed a decrease of 6138 tons, as compared with the corresponding period last year. Quotations are 63*l.* 10*s.* to 64*l.* for bars, 70*l.* for Urmeneta ingots, 12*s.* 6*d.* to 12*s.* 9*d.* for ores and regulus; and 14*s.* 3*d.* nominally for Barilla. Arrivals here during the fortnight of West Coast S.A. produce:—Lady Bird, from Tonga, with 50 tons bars; Chanaral, Valparaiso, 60 tons bars; Oruro, Valparaiso, 50 tons bars; David Livingstone, Carrizal, 180 tons regulus; Bodryddan, Valparaiso, 32 tons bars; Jessie Stowe, Guayaquil, 739 tons regulus; Rosamond, Valparaiso, 60 tons bars; Castleton, Valparaiso, 46 tons bars; Colchagua, Guayaquil, 45 tons bars. At Swansea—Cornwall, from Coquimbo, 739 tons regulus; Prince Alfred, Chanaral, 740 tons regulus; Corinna, Carrizal, 426 tons regulus; and 249 tons bars; Capricorn, Pena Blanca, 530 tons regulus; M. A. Holman, Lota, 281 tons bars and 137 tons regulus; Joseph Thompson, Carrizal, 566 tons regulus; Foxhound, Carrizal, 685 tons regulus; Maravilla, Coquimbo, 691 tons ores and 265 tons regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, are as follows:

Ores.		Regulus.		Bars.		Ingots.		Barilla.	
Liverpool .....	1923	2675	10,483	1947	240	1947	240	1947	240
Swansea .....	3572	9556	1543	1543	137	1543	137	1543	137
Total .....	5495	12,331	12,126	2084	482	2084	482	2084	482

Representing about 21,200 tons fine copper, against 16,100 tons fine copper Sept. 15, 1869; 8900 tons Sept. 15, 1868; 9700 tons Sept. 15, 1867.

The actual exports of copper from the West Coast S.A. in the first six months of this year, say up to June 30, amount to 26,416 tons in fine copper, against 32,554 tons in fine copper same period in 1869; 18,060 tons in 1868; 22,181 tons in 1867. Of this, 52-19 per cent. are in bars, 45-05 per cent. in regulus, 2-76 per cent. in ores; in 1869, 62-31 per cent. were in bars, 32-33 per cent. in regulus, 5-36 per cent. in ores; in 1867, 69-71 per cent. in bars, 33-67 per cent. in regulus, 6-22 per cent. in ores.

**Messrs. James and Shakespeare.**—Small sales of furnace material have lately been made at irregular prices—no parcel of sufficient magnitude to test the market being offered for sale at such a figure as to induce smelters to operate and fix quotations on a firm basis. In Chili bars a moderate business has been done at 64*l.* to 64*l.* 5*s.* for various brands, Urmeneta included; and buyers are still offering to purchase best marks at the lowest rate, but sellers ask the highest price for the same. On the Valparaiso mail was delivered, advising charters for the last fortnight in July of about 3900 tons pure, of which 1500 tons in bars and ingots, 2000 in ore and regulus for England, and 400 tons regulus for France; on the following day telegrams arrived giving the charters for the first fortnight in August as about 1130 tons pure, of which 910 tons in bars, 220 tons in ore and regulus, the whole being for this country. During the corresponding periods of 1869 the charters were respectively 2869 tons and 1730 tons pure. In Australian about 200 tons cake (Hunter River and Wallaroo) have been taken at and near our list prices, chiefly for export to the North of Europe. English sorts continue quiet, but smelters have booked a few more orders for India sheets at 73*l.*, and some parcels of raw metal, obtainable at low rates, were taken there for export and home consumption.

**Messrs. Vivian, Younger and Bond.**—There is not much to report, the question of Peace being still in so unsettled a state. A few sales of Chili bars are reported at 63*l.* 10*s.* to 64*l.* cash. Several transactions have taken place in Australian at 70*l.* 15*s.* to 71*l.* 10*s.* for Wallaroo, and 71*l.* 2*s.* 6*d.* for Bars; also a parcel of River Hunter has changed hands, but the price has not transpired. In ores and regulus no transactions are reported. The Chili mail of Aug. 2, received 13th inst., advised charters of copper produce for the fortnight, amounting to 3900 tons fine copper—1900 tons in bars and ingots, and 2000 tons fine copper in ore and regulus. Yesterday telegrams came to hand, advising that the charter for the fortnight ending August 17 were 1150 tons—900 tons bars and ingots, and 250 tons fine copper in ore and regulus, giving a total of 5050 tons of fine copper chartered for in a month.

The MINING SHARE MARKET has been more active this week, notwithstanding that the settlement of the fortnightly account occupied the chief attention of the dealers for two or three days. The principal demand has been for West Chiverton, East Grenville, Grenville, East Lovell, Great Retallack, Taquaril, New Lovell, Marke Valley, Chiverton Valley, Wheel Seton, Great Vor, &c.

The Vice-Warden of the Stannaries Court, in a very elaborate judgment, has decided that existing shareholders alone are liable for the debts of a mining company in liquidation. This will relieve the minds of many "past members," as well as of those who may have relinquished their shares in mines on paying up their proportion of debts to the date of their relinquishment. On several occasions we have called attention to the injury inflicted on the mining interest by the proceedings of the Stannaries Court, particularly in reference to the annoyance caused to "past members" of a company—that is, those who had either sold, transferred, or relinquished their shares in mines under liquidation four or five years ago, but nevertheless were inserted in the list of contributors as a sort of "reserve corps," and we have great satisfaction, therefore, in calling attention to the decision of the Vice-Warden.

West Chiverton have been firmer at 53 to 55. The mine continues to look well. Bwleh Consols, 3 to 3½; Chiverton Valley, 2½ to 2¾; Ding Dong, 17 to 19; Dolcoath, 125 to 130; East Caradon, 4 to 4½. East Lovells have again fluctuated, and leave off 33 to 34. East Pool, 8½ to 9½; East Grenville, 2½ to 2¾.

Australian United, 1½ to 1¾; the directors have made another appeal to the shareholders to come forward and subscribe for the preferential shares, under the plan they submitted and passed on July 20. Out of 6000 shares then authorised to be issued only 1465 shares have been taken, and it is hoped the present prospects of the mine will induce the shareholders generally to come forward now, and enable the directors to remove the principal difficulty of the company. We have more than once stated that the plan of the directors has not met with general approval, nevertheless if they persist in it we trust the shareholders will respond in a manner that will set the financial position at rest once and for ever. We are assured on the best authority that the mines from this time will make large profits, and that they only require to be relieved of the incubus of an old debt. The plan of the directors is to issue 6000 shares, of 2*l.* 10*s.* each, 10*s.* deposit. These shares to bear a preferential dividend of not exceeding 15 per cent. per annum out of profits; and to pay this dividend, supposing the whole 15,000*l.* should be called up, would require 2250*l.*, or a profit of 200*l.* per month only. The old shares would be entitled to 15 per cent. in the second place, and then all shares to rank alike for further dividends out of profits. The company, however, may at any time after three years pay off these new shares in one sum, or by instalments, together with a bonus of not less than 25 per cent. Should they not be taken up by the present shareholders before the 21st inst. they will, we presume, be then offered to the public.

Wheel Crebor, 12*s.* to 15*s.*; at the meeting the accounts showed a cash balance in hand of 117*l.* 3*s.* 4*d.*, and liabilities over assets of 321*l.* 17*s.* 6*d.*; a call of 1*s.* 6*d.* per share was made; the prospects of the mine are reported as favourable, and the next quarterly sale of the mine will be about 80 tons. Great Laxey, 18½ to 19½; Great Retallack, 15*s.* to 20*s.*; Great Western, 35*s.* to 40*s.*; Great Wheel Vor, 6½ to 7; Herodsfoot, 42½ to 45; Marke Valley, 6½ to 7½; New Lovell, 2 to 2½; North Lovell, 5 to 7; Penhalls, 5½ to 6; Prince of Wales, 13*s.* to 15*s.*; Providence Mines, 38 to 40; South Condurrow, 2½ to 2¾; Spearne Moor, 18 to 20; Tankerville, 14½ to 15; Tancroft, 34 to 36; Trumpet Consols, 21 to 23; Van Consols, 2½ to 2¾; West Frances, 27 to 29; West Pant-y-Go, 3 to 4; West Seton, 120 to 125; Wheel Basset, 70 to 75.

Chontales, 9*s.* to 11*s.* The remittance this month is 152 ounces of gold, valued at £2103, against a cost of £4199. During the first half of the month the works were very much hindered by continuous floods. Don Pedro del Rey, 2½ to 3. The return for July is 6861 oits.







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### Notices to Correspondents.

\*. Much inconvenience having arisen in consequence of several of the Numbers  
 during the past year being out of print, we recommend that the Journal should  
 be filed on receipt: it then forms an accumulating useful work of reference.

SIR,—I should feel very much obliged if any reader would kindly answer the  
 following question in next week's Journal. My estate has cost me 50,000l.  
 Since I purchased, mineral has been discovered in large quantities. I have  
 the ore or stone assayed, and it gives in the rough state—that is, the stone  
 simply broken—21 per cent. of lead, and 4 ozs. of silver to the ton of ore. Now,  
 as I am no miner, will anyone kindly inform me if it will pay to work, and  
 what percentage will it give? I understand it will cost me 2l. a ton to get the  
 ore into the London market, but the rock is easily crushed.—LANDLORD.

LEAD SMELTING FURNACE.—“D.F.” (Swaledale).—The improved furnace re-  
 ferred to in the Journal of Aug. 27 was patented in England Aug. 18, 1869.  
 The saving effected is said to be considerable. We will forward a copy of the  
 specification, which has a drawing of the furnace, on receipt of 16 stamps.

LEACHING.—“J.K.” (Maiden).—The process is really a peculiar mode of wash-  
 ing by which metallic salts, soluble only under certain conditions, are sepa-  
 rated; thus in the extraction of silver the leaching is an important part of  
 the process. After the ore has been chloridised, the base metal chlorides are  
 leached out with hot water—that is, they are soaked out, the water being kept  
 warm by the admission of a continuous stream of fresh water, that which has  
 done its work passing away through a perforated bottom in the box contain-  
 ing the ore.

WHEAL RUSSELL.—“J.M.”—We shall be glad to receive the information.

VAN CONSOLS.—As many unfair means are being adopted to depreciate the  
 market value of these shares, with the object of securing them at the lowest  
 possible price, I would suggest to the executive the urgency of pointing out to  
 the shareholders the importance of the fact stated in the report from our agent,  
 which appeared in last week's Journal. The statement to which I refer is,  
 that “a large body of flookan has been opened upon.” When Mr. J.Y. WATSON,  
 F.G.S., first visited the now celebrated Van, he drew attention to the presence  
 of flookan being regarded as an invariable evidence of the existence of large  
 deposits of lead. We have seen what has been the result in Van, and as we  
 have now—for the first time, be it remembered—the presence of flookan, or  
 what is locally known as “trickling,” in Van Consols, and in connection with  
 the Van Consols, the shareholders should be apprised of its prospective im-  
 portance, as bearing upon the future value of our mine.—A SHAREHOLDER.

GOVERNMENT MINE INSPECTION.—“J.S.M.” (Gelsenkirchen).—The appoint-  
 ment nominally rests with the Home Secretary, but practically with the coal-  
 masters and colliers themselves. When a vacancy occurs, several of the lead-  
 ing colliery-viewers are recommended by the masters and men respectively,  
 each, of course, suggesting the man in whom they have most confidence. When  
 both masters and men recommend the same man (as was the case with Mr. R.  
 Moore), he is nearly certain to be appointed. His duties may be described as  
 those of consulting viewer for all the mines in his district, and he has to com-  
 plete compliance with the Act of Parliament. The salary is 600l. per annum,  
 and expenses.

TINCOFF.—In the notice of the Tincoff meeting, in last Saturday's Journal,  
 it is stated that “the ends in the different lodges are worth, in the aggregate,  
 17l. per fathom.” In the report sent me the ends are stated to be worth 32l.  
 per fm. Will some one concerned kindly inform me which is correct?—W.B.

THE QUEEN.—“Observer” should have appended his name to the “analysis of  
 the complicated statement of accounts produced at the late meeting.” Such  
 course would not only have been fair to Mr. Barnard, but also more satisfac-  
 tory to other parties interested.

CIRCULAR MINING.—If “J.B.” will forward the paper it shall appear in the  
 Journal.

## THE MINING JOURNAL, Railway and Commercial Gazette.

LONDON, SEPTEMBER 17, 1870.

### COAL FOR THE ADMIRALTY.

The excellent quality of steam coal produced in South Wales has  
 done much to place the greater portion of the trade in the hands of  
 the Welsh coalmasters; and from the proceedings at the meeting of  
 the Newport Chamber of Commerce, on Monday, it would appear  
 that the superiority extends to the whole of the South Wales field,  
 the opinion there expressed being that the Tredegar coal was fully  
 equal to any of that shipped at Cardiff. In bringing the question  
 of the coal supply of the Navy before the meeting, the Chairman,  
 Mr. BLADON, referred to an official special report, just issued, and  
 explained that, although the same coal did not in all cases exhibit  
 precisely similar results, the difference was no doubt owing to the  
 variation of the engines on board the ships; but they might take  
 what they had got as something like a fair result of the same coals  
 on the same ships. He first referred to the ship *Penelope*, which took  
 on board, at Lisbon, a quantity of Russell's new Black Vein coal,  
 which was reported as very good, and fit for service, with 7 per cent.  
 of ash and clinker, and little smoke. She also took Thomas's Mer-  
 thyr and Powell's Duffryn, which was reported very good, and fit for  
 service, with 7 per cent. of ash and clinker, and little smoke. Of  
 Down's Merthyr and Ocean Merthyr 100 tons was similarly reported,  
 with 10½ per cent. ash and clinker, and little smoke. And the whole  
 results showed that Newport coal was not one iota inferior to the coal  
 shipped at Cardiff.

During the six months ending June the *Caradoc* shipped at various  
 ports in the Mediterranean, &c., and the report was in every way fa-  
 vourable. Wayne's Merthyr and Joseph's Upper Four-feet Merthyr  
 mixed were pronounced very good, with 18 per cent. of ash and clinker,  
 and similar reports were made upon Davies' Merthyr, with 14 per  
 cent.; Tredegar, with 10 per cent.; Powell's Duffryn, with 16, 12,  
 and 13 per cent. respectively; Nixon's Navigation and Aberdare  
 mixed, with 19½ per cent. ash and clinker, was reported “fair” only;  
 as was also Merthyr, with 13 per cent., taken in at Algiers; and In-  
 sole's Merthyr, with 10½ per cent., taken in at Corunna. Wayne's  
 Merthyr, with 15 per cent. clinker and ash, was found very good; and  
 the same report is made upon Tredegar and Llangennech mixed,  
 with 10½ per cent., taken in at Gibraltar; so that testing one with the  
 other they found that the Tredegar coal, which was the only Newport  
 coal shipped, had the best results over the other coals shipped, which  
 were exclusively from Cardiff, and the expenditure a larger one.  
 Nearly similar results were reported in the *Donegal* and the *Warrior*,  
 and the results in the *Doris* placed Newport and Cardiff coals on  
 an equal footing.

To compare the Welsh coals with those of other districts the results  
 reported by the *Hind*, *Jackal*, and *Rainbow* were taken. In the *Hind*  
 the mixture of Down's, Merthyr, and Hartley Main was found to  
 generate steam well, but it was not considered to be adapted to gun-  
 boat service, as the tubes fouled very quickly when using it. The  
 amount of ash was greater than in using Welsh coal alone; there  
 was less clinker, but the smoke was of greater volume, and of black  
 colour. The Scotch coal appears to be generally of fair quality, but  
 rather smoky. The Wishaw Motherwell Colliery and the Wishaw  
 Cammerton Colliery where the coal was derived; it  
 seems usually to contain from 10 to 15 per cent. of ash, and 30 lbs. or  
 40 lbs. of clinker, to the ton. One shipment of Motherwell, taken in  
 at Stornoway, was reported “bad, not fit for service,” but the seven  
 others were all “fair, fit for service.” In the *Warrior* a shipment  
 of Sherdley (Lancashire) coal was reported “not good in generating  
 steam; expenditure large.” Berwick Hill and Darley Main coals

used in the *Rainbow* were reported to “generate steam fairly, make  
 an enormous amount of smoke; otherwise fit for service.” Mr.  
 BLADON regarded the words “otherwise fit for service” to mean  
 that the coals were not fit for service. He believed he had now  
 pretty well given them the substance, in what he had read, of the  
 whole of the contents in the report. They were aware that in South  
 Wales there were two classes of coal, known—one as the semi-anthra-  
 cite, the other as semi-bituminous (which was bituminous in a light  
 degree), and was shipped at Newport. The theory laid down by Go-  
 vernment was that the semi-anthracite coal, which in theory did not  
 cohere on combustion, and was, therefore, in many respects difficult  
 to deal with, should be mixed with coal which would cohere, and im-  
 part its cohesive qualities to the semi-anthracite.

A committee was formed to consider the best means of bringing  
 the matter before the proper authorities.

### PLAIN CYLINDRICAL BOILERS.

Of all the discussions at the Iron and Steel Institute annual meet-  
 ing in South Wales, no one was so well sustained and so spirited as  
 that which was occasioned by the paper “On the Efficiency and  
 Durability of Plain Cylindrical Boilers,” of which Mr. JEREMIAH  
 HEAD, of Middlesbrough, was the author. A brief epitome of that  
 discussion and of the paper appeared in the Supplement to last week's  
 Journal. Out of the 17,825 boilers in the care of the Boiler Assur-  
 ance and Steam Power Company (Manchester), the Manchester  
 Steam Users' Association, and the Midland Steam Boiler Inspection  
 and Assurance Company, at the time when Mr. HEAD prepared his  
 paper, 4052 were of the plain cylindrical class. Whilst 16 per cent.  
 of the whole on the books of the first-mentioned and 12½ per cent.  
 on those of the second were plain cylindrical, on the books of the Mid-  
 land Company the proportion was plain cylindrical in the southern  
 district 66 per cent. and in the northern 69 per cent. As our readers  
 are aware, the chief customers of the Midland Company are iron  
 and coal masters. The figures, therefore, show that those two in-  
 dustries are far beyond all others concerned in the subject of the  
 paper. Some colliery boilers are likewise inspected by the Steam  
 Users' Association, and Mr. L. E. FLETCHER, its chief engineer, in  
 one of his recent annual statements, said:—“I cannot conclude the  
 report without urgently repeating the appeal to colliery owners so  
 frequently made on previous occasions that they would give up the  
 use of these treacherous and uncontrollable plain cylindrical, exter-  
 nally fired boilers, and adopt the internally-fired double furnace  
 boiler instead.” The plain cylindrical boiler in the coal and iron  
 district of the South is usually from 20 to 40 feet in length, 30 feet  
 being the more frequent size, with a proportionate diameter. In the  
 Northern district they are generally 45 ft. long, and 4 ft. diameter.  
 For the utilisation of the heat produced by the combustion of the  
 waste gases from blast-furnaces they are in the same district as long  
 as 60 feet, or even 80 feet, by 4 feet 6 inches. It would hence seem  
 that Mr. FLETCHER'S wish is not likely to be readily acted upon.  
 The simplicity of the plain cylindrical, with the consequent ease with  
 which it can be examined, its comparative non-liability to over-  
 heating from shortness of water, and its much less cost than the  
 Lancashire or two-tubed internally-fired boiler, will always give it a  
 preference. Still, it has a defect—a defect which becomes conspi-  
 cuous in most cases directly the length gets over 35 and 40 ft. That  
 defect Mr. HEAD believes “lies at the root of most of the feeling  
 which is, perhaps, properly entertained against them in some locali-  
 ties.” Choosing homely language with which to express the evil,  
 Mr. HEAD says: “They are liable to break their backs.” A yet more  
 homely and more accurate description would be that they are liable  
 to break their bellies. By the frequent heating of the under surface  
 at the same time that the top remains cool, the belly of the boiler  
 gradually contracts, the ends which kick-up when by heating the  
 belly elongates, ultimately bend down, and ring rivets giving way  
 in the centre of the under surface, the boiler becomes for a time un-  
 serviceable. Happy if it does not burst. Mr. LONGBRIDGE, of the  
 Steam Power Company, has known several explosions due to the  
 extension of such ruptures round the entire circumference.

To remedy this imperfection, and thereby remove the chief com-  
 plaint brought against the plain cylindrical boiler, Mr. HEAD pro-  
 poses to substitute yielding for rigid supports, recommending that  
 the boiler should be hung upon evolute springs. This, he maintains,  
 is all that is necessary to produce the desired effect. A boiler so  
 altered he has had at work, at Middlesbrough, since the beginning  
 of March. As will have been inferred from what we have said, no  
 springs are necessary for boilers 30 ft. in length, upon two supports;  
 but for lengths of 60 to 75 ft. five supports are required, the end ones  
 being furnished with durable springs.

Passing over the question of the comparative cost of a plain cylin-  
 drical and of a two-tubed boiler with the remark that, notwithstanding  
 the particular case to which Mr. HEAD referred, which is no doubt  
 capable of explanation, the price of this latter should not, steam for  
 steam, be more than twice that of the former—we enquire if there is  
 not a more complete and more satisfactory remedy than that which  
 Mr. HEAD has adopted? Can we not remove that state of things  
 which brings about the contraction of the under surface? “Yes, by  
 heating the top as well as the bottom of the boiler,” most people will  
 reply. Admitted; but in the hands of the mass of the men who have  
 the care of the boilers in our iron works and collieries would there  
 not be danger from superheated steam? To our own knowledge, a  
 steam user upon a large scale, who, moreover, is well up in intelli-  
 gent boiler construction and boiler working, would have adopted this  
 remedy years ago, but for his fear of its effect in the hands of the  
 bulk of our engine fitters. “But,” in substance said Mr. COMPTON,  
 during the discussion at Merthyr, “I have put the idea into practice,  
 and it works well.” Mr. HEAD conceded that if such a thing could  
 be conveniently done it would lessen the evil to a great extent. If  
 Mr. COMPTON'S experience is not evidence sufficient that it can be  
 conveniently done, then let us suggest that there would not be much  
 difficulty in carrying a brick flue over the top of the boiler with a  
 9-inch internal space, 6 in. of which might be occupied by the flames  
 on their way to the stack. Even then, however, the evil would only  
 be lessened, for the bottom would always be hotter than the top to some extent.

But this is not all that can be done. Mr. HEAD showed very con-  
 clusively how the boiler bottom had gradually shortened by repeated  
 heating and cooling. Boiler-plates, like all other iron that has been  
 passed between cold rolls, become slightly case-hardened to the ex-  
 tent of the film upon its surfaces, and the inside is, therefore, of a  
 consistency different from the outside. To bring about perfect uni-  
 formity the plate should be annealed. Mr. WILLIAMS virtually did  
 this when he made the experiments dealing with the question of the  
 contraction and expansion of iron. He re-heated a flat bar to a high  
 temperature at once, taking care that the metal should not oxidise  
 in the re-heating. This done, he found that all its shrinking prop-  
 erties had gone, and that it shrank no more, however often it was again  
 subjected to the action of the fire. What is to prevent our boiler-  
 plates from being shrunk down by annealing before they are put to-  
 gether as a boiler? The process could be gone through either at the  
 iron works or in the boiler-yard. At the former they still anneal all  
 their thin sheets, and before the undesirable modern method of  
 shaping boiler-plates could come about the boiler-makers used to have  
 to put their plates through the fire before they could give them the  
 necessary bend. We suspect that it was to some such an operation  
 that Mr. BARNALL should attribute the present security of the boilers,  
 upon which, to prevent cracks, he removed the domes, and took the  
 steam from the centre of the top, and not from the ends. The bene-  
 fit is much more likely to be due to the repairs than to the removal  
 of the domes. Certain of the atmospheric phenomena which he  
 described were more likely to produce of themselves a very different  
 effect to that which was observed. For instance, a storm of rain, by  
 increasing the coldness of the top of the boiler, would have been more  
 likely to lift than to bring down the ends.

We have, then, the annealing of the plates, and the passing of the  
 flame over the top of the boiler. But this is not all that could be  
 done. Why do our boiler makers continue to use the alternating  
 longitudinal and the circular seams? Sir WM. FAIRBAIRN long ago  
 demonstrated the weakness of the former. How many years are to  
 elapse before we find steam users throughout our iron and colliery  
 districts stipulating, as many of the most careful steam users else-

where are now doing, that their boilers shall be constructed with  
 diagonal seams? We have no hesitation in saying that twice the  
 power to resist seam rips in the very cases under discussion would be  
 furnished by boilers with diagonal as compared with the old style of  
 seams. A safer, a more economical, or a more easily-worked boiler  
 we cannot conceive than a plain cylindrical, made of annealed plate,  
 joined diagonally, and having the flue passing over the top. Such a  
 boiler so worked, supposing that there is no risk in the heating of  
 the top, would impart a sense of security to the owner which could  
 hardly be got from spring supports. Mr. HEAD gives 18l. 10s. per  
 ton as the price of plain cylindrical boilers. At that price such  
 boilers with diagonal seams could, no doubt, be delivered in Middles-  
 brough. If that be so, then we have only about 5s. per ton to be  
 added for annealing and the making of the top flue, as against the  
 cost of the suggested springs. Nevertheless, Mr. HEAD'S was a most  
 valuable paper, and its author well merited the thanks which were  
 warmly accorded him.

### GOVERNMENT ENQUIRY INTO THE OPERATION OF THE TRUCK ACT IN SCOTLAND—No. II.

The Commissioners appointed to conduct this enquiry brought their  
 labours to a close—at least, for the present—on Monday, and, so far  
 as we can gather, their labours have not given general satisfaction.  
 Since last week it has been brought out that Truck is not confined,  
 by any means, to the coal and iron trades—that it obtains among  
 builders and constructors, is practised in our ship-yards, at lime  
 works, &c. We have also been reminded that discount and banking  
 houses practice “poundage.”

The Scotch iron and coal masters, we believe, also object to the  
 way in which the prosecution was got up, and the spirit in which it  
 was conducted. In particular, we believe, that they complain that  
 the prosecution was principally supported by witnesses supplied by  
 ALEXANDER McDONALD through the agency of Mr. CAMERON, of the  
*North British Daily Mail*, and that the questions were put in such a  
 way as to elicit only one class of adverse answers. One witness so  
 supplied, we suppose, alleged against the store-system that, while  
 working at WATSON'S pits, Motherwell, he had to take provisions in-  
 stead of cash, and send them on to his “wife and weans” at Salt-  
 coats. On examining the books at the works, no such name appears  
 as that of JOHN McPHERSON, the name the witness gave in the box.  
 It turned out, however, that the same person, under another name,  
 had been employed by one of Mr. WATSON'S contractors; and is that  
 a witness on whose testimony much reliance can be placed? Why does  
 he change his name as he goes from place to place? And is his real  
 name yet to be discovered? The story of sending provisions to his  
 family in Ayrshire is being explicated, not by the Commissioners,  
 but by Mr. WATSON'S office, so that we may yet hear of this notabil-  
 ity and his provisions in another shape.

With regard to the store system, it is quite to be understood that  
 it would be very easy to produce numbers of shopkeepers from  
 the vicinity of the mining districts who would unreservedly con-  
 demn the goods sold at the stores as inferior. But they are undoubt-  
 edly interested parties, who would largely benefit by the total abo-  
 lition of the store system; and, indeed, it must be very annoying to  
 such dealers to see hundreds of workmen so “thirled” to the mas-  
 ters' stores that they cannot leave them. We believe that there is  
 good and substantial authority for asserting that, generally, the  
 goods sold in the stores of the leading coal and iron masters are as  
 cheap and as wholesome as those sold in the adjoining shops from  
 which workers would have to make purchases; and that there are  
 scores of men who, if entrusted with a month's, or even a week's, pay  
 in hard cash, would be without a penny in twenty-four hours, with  
 their households in starvation, preparing the way for typhus. The  
 store system, as administered at some works, is a foul blot on our  
 trading principles; but in many cases the payment in provisions—  
 not drink—to a certain extent, insures many families from the ter-  
 rible evils of intemperance, and the disease and desolation which  
 follow in its train. That in many cases men who deal in work-  
 stores receive the ordinary value of the neighbourhood for their  
 money, is evident from the fact that the price of goods in the stores  
 rules the other shopkeepers, and not the shopkeepers the stores; and  
 we have it on authority that in the great majority of cases storemen  
 buy at *keener prices* from wholesale houses, and consequently are  
 able to produce a greater profit; but that profit is not got out of  
 exorbitant prices charged to the men. So much is this the case,  
 that a dissenting minister from one of the iron and coal districts  
 stated in evidence that he purchased all his victualling goods at  
 what is termed a truck store, and he found them excellent, and as  
 cheap as those in the district. This gentleman was subject to a great  
 deal of cross-questioning, but only the one reply was elicited. And  
 yet this store was condemned by the men!

If we have now got all the evidence before us—the evidence of the  
 provident and more intelligent men being all carefully reserved—it  
 would appear that much of the opposition to the store system is with-  
 out any just foundation. Against it there seems to be an innate re-  
 pugnance, transmitted from sire to son; and yet, to the very class  
 who have given virulent evidence against it it ensures daily bread  
 both to themselves and their families; while to pay them in money  
 would be to entail on them destitution, drunkenness, and permanent  
 misery. Mr. RALPH MOORE, Government Inspector of Mines, bore  
 testimony to the improvidence of the miners in the West; and if a  
 system of weekly payments were instituted at all the works to-morrow  
 we should have the cash-office besieged, before two days were passed,  
 with claimant and starving men importuning for money—yes, or  
 “lines” for bread. The Legislature would do well to consider seriously  
 before they attempt to legislate on this question, lest in attempting  
 to remedy an evil they end by inflicting a greater.

### COLONIAL RAILWAYS, AND MINERAL TRAFFIC.

The energetic development of the mineral resources is, perhaps,  
 the surest road to prosperity in every country dependent upon com-  
 mercial success to establish its greatness; and there is certainly no  
 greater aid to mining enterprise than the facilities which railways  
 afford, or should afford, for the rapid and economic transport of  
 minerals and materials. The establishment of a railway in South  
 Australia to connect Adelaide with the mines of the Far North is  
 looked forward to as an event which would give a fresh impetus to  
 the general commerce of the colony; and not the slightest doubt is  
 entertained amongst the thinking portions of the South Australian  
 colonists, and of the English capitalists connected with South Aus-  
 tralian matters, that an equitable arrangement will shortly be made that  
 will secure profits to the capitalists commensurate with the enormous  
 advantages to be conferred upon the colonists. But it is essential  
 that in any arrangement made it should be borne in mind that pri-  
 vileges granted by the Government, or work performed by the Govern-  
 ment of a colony, is supposed to be for the equal advantage of all,  
 and not for the especial benefit of any particular party or interest;  
 for otherwise a Government railway may really be as useless for  
 assisting the development of a district as the line is said to be which  
 was intended for the benefit of the colonists west of Sydney.

The Great Western Railway is now opened to the Lithgow Valley  
 coal field, which is 97 miles from Sydney, and there can be no doubt  
 that if anything like liberal freights were charged capital would soon  
 be found for opening out the field. Instead of this, quite the opposite  
 is the spirit exhibited. The rate in Government trucks was 8s. for the  
 97 miles, or a fraction more than 1d. per ton per mile. It will re-  
 ally be understood that such a charge as this would weigh very hea-  
 vily upon newly-opened collieries in a new district, but those inter-  
 ested console themselves with the hope that they would at least be  
 able to struggle on until increasing tonnage sent over the line could  
 be referred to as an inducement for those in power to lighten their  
 burden. But in this they were doomed to still greater disappointment;  
 pressure having been brought by those connected with the Newcastle  
 coal fields, situated close to the coast, to bear upon the Government,  
 97 miles. The charge is now felt to be monstrous, for a Government  
 railway especially; and, although it is considered, and very justly so, that  
 the line is excessively small, it is considered, and very justly so, that  
 the illiberality displayed is in every way calculated to keep it so.  
 At the date of the last advices from Sydney efforts were being made



to induce the Southern and Western members of Parliament to combine together to secure a more equitable arrangement, so that hopes were entertained that justice would be done in the matter, more especially as the coal trade is making such rapid strides in New South Wales that it would scarcely affect Newcastle if three companies started on the Great Western Railway, as the suburbs of Sydney would then use coal instead of wood, as they do at present.

With regard to the freight-tariff upon all railways constructed for the purpose of inducing the development of a district or of an industry (and it is fair to assume that all colonial railways would come within this category), it is most desirable that some fixed principle should be adopted as a standard. The proximity of a coal field or of a manufacturing port to a place of shipment or place of consumption must always give it an advantage over those less favourably placed; but we have seen on our home lines that it is possible to make certain concessions to those sending large quantities or over long distances with equal advantage, pecuniarily, to the customers and to the railway company. Of course the rate per ton per mile will vary according to the commodity carried, but the proportion should always remain the same. Thus, copper ore might be charged a maximum rate of 4d. per ton per mile, whilst coal could not bear more than 1d. per ton per mile. These rates would apply when the distance carried was less than 50 miles; above that distance there would be a proportionate reduction, thus—

Distance.	Copper.	Coal.
Under 50 miles	4d.	1d.
Under 100 miles	3d.	¾d.
Over 100 miles	2d.	¾d.

It must be understood that full truck-loads only be taken at these rates, and that such arrangements be made by the freighters as shall prevent the railway company's trucks lying idle longer than is necessary for loading and discharging. When the charge for 51 miles or 101 miles at the next lower rate would be less than that chargeable for the actual mileage, the rate for those distances should be payable, so that 1 ton carried 40 miles would be charged (not 3s. 4d.) but 3s. 2d., and so on with other distances in a similar position. Such an arrangement would give equal satisfaction to all concerned.

#### NEW SMOKE-PREVENTING BOILERS.

An important invention has just been patented by Mr. ARNOLD, of Barnsley, and Mr. CARNELLY, of Manchester, by which a boiler is so constructed that by a peculiar arrangement of the flues no smoke is emitted into the chimney. The invention has just been tested at the works of Jackson Brothers, of Barnsley, and with such success that whilst the smoke was thoroughly consumed there was a saving in fuel of nearly one-third, as compared with the ordinary boilers, whilst imposing no additional labour on the fireman. The patent boiler has two self-contained fire-boxes or furnaces, and instead of a bridge, as in an ordinary two-flued boiler, there is placed a stoppage or end to the fire-box, by which the flame or draught is arrested in its usual course, and conducted through two transverse openings—one on each side of the fire-box. The gases that are evolved are caused to pass through the openings named underneath the boiler into what is termed a combustor chamber, where the incandescent gases ignite into a flame of intense heat and brightness, thus preventing the formation of smoke, seeing that it is an admitted and well-known fact that when smoke is once formed it is impossible to burn it, though it should pass through a white heat. From the combustor chamber the flame is conducted into a second tube chamber, where are inserted a number of what are called Arnold's vertical tubes of 3 in. lap-welded. The fire-box and back flues are separated by a water space, and those being self-contained give great strength to the boiler, and render the collapsing of the tubes almost impossible; also, in consequence of the old bridge being done away with, a greater amount of heating surface is obtained from the same amount of fuel. The immense heating surface obtained by the thorough burning of the carbon confirms the calculations of MM. Farre and Silbermann, who completed the researches of Dulong. They found from their experiments that the pound of carbon imperfectly burned, producing carbonic oxide, gave 44,000 units of heat, whereas one pound of carbon entering into complete combustion, producing carbonic acid, gives 14,500 units of heat.

The principles embodied in the new boiler are those which have been advocated by all the most celebrated engineers and chemists of the last 20 years, but have never been carried out in their full entirety until now. Of the other advantages claimed by the patentees are that the working of it requires no extra care in firing, for the most careless stoker would fail to create a nuisance in the production of smoke. The invention, which can be applied to any existing boiler, either Cornish or cylinder, combines simplicity, efficiency, strength, and economy, is self-acting, and not liable to get out of order. Practical men, who have witnessed the working of the new boiler and apparatus, are unanimous in the opinion that the invention is a valuable one, and will, no doubt, be pretty generally adopted.

#### LEAD SMELTING FURNACES.

Reference was made in the Journal of August 27 to an improved furnace, invented by Mr. GEORGE METCALF, of the Pertusola Foundry, near Spezia, Italy, and in successful operation there; it is now proposed to give a brief description of the invention itself, the object of which is to expedite and facilitate the operation of obtaining lead from its ores. For this purpose a furnace is used divided longitudinally for a portion of its length by a vertical partition or wall extending upward to the crown of the furnace, but not extending to the grate or fire-bars, so that a chamber with a bed is left near the grate or fire-bars extending the entire breadth of the furnace, and having no partition at that part. The compartments formed by the partition have at their ends arrangements for opening and closing communication between them, and ducts or uptakes leading thence into the chimney. The charges are placed in the compartments formed by the partition, and are gradually fed forward to the fire chamber or bed in front of the fire-bars. The draught is shut off from each compartment alternately, one compartment being open to the chimney, while the other is closed, so that while one set of charges are exposed to the free current of flame, or aeriform or gaseous products of combustion rushing from the fire through the compartment towards the chimney, the other set of charges are subjected only to the action of dead heat, because the draught apertures at the end are closed. The lead as it is fed in dries and becomes calcined, and wholly or partially desulphurised, as it is passed gradually along the chamber, and at length it reaches the bed or chamber in front of the fire-bars. The greatest portion is then removed, in a state of slag or agglomeration, through an opening in the furnace, fitted when opened with a removable spout down which the slag descends into a wagon, and is run off therein to a blast-furnace, in order to be again subjected to heat for metallurgical purposes.

The advantage claimed for Mr. Metcalf's furnace is that less heat is required, and consequently less fuel is expended, and the furnace is better preserved. The lead that remains in the furnace is removed by tapping the furnace, and allowing the molten lead to run out. The bed of the furnace is by preference constructed of a peculiar curved form, and in order to get out all the lead, in case of the furnace bed leaking or becoming destroyed, a false door is used parallel with the tapping-door and screwed thereto, the interval between the two doors or plates being filled with bone-ash, or other non-conducting material. Thus, if the furnace-bed gets destroyed or leaks, and the lead runs through it, the lead or metallic product can be withdrawn through the false door. The novelties claimed for the invention are the employment of the partition extending for a portion of the length of the furnace, so as to form two passages as already, the employment of the two tapping-doors, and the general arrangement of the parts.

It will readily be understood that, as already stated, four charges are continually under treatment—two on the preliminary side of the partition, and two on the finishing side. These charges average 1½ ton of ore, and as one charge is drawn every six hours, it follows that each charge is twenty-four hours in the furnace. The result of the treatment is declared by competent judges to be as near as may be perfect. The loss by volatilisation is much less than usual, and the saving of fuel is enormous, 5 tons with the new furnace doing as much work as 26 or 28 tons with the old reverberatory fur-

nace. The wear and tear of material and plant is reduced by two-thirds, and the manual labour is certainly not greater than under the old systems, and is much more simple. The more favourable results obtained with Mr. Metcalf's furnace is accounted for by the fact that by its use instead of burning the lead (thereby producing smoke and vapour), the lead is, by not being brought under the action of heat so intense as in the old systems, not volatilised or oxidised, but simply metallised. The invention is generally considered one of the most important yet introduced.

**LIABILITY OF PAST SHAREHOLDERS.**—We are indebted to the Registrar of the Stannaries Court, Mr. FREDERICK MARSHALL, for the copy, published in another column of this day's Journal, of an important judgment just given by the Vice-Warden, Sir EDWARD SMIRKE, in connection with the winding-up of the Budnick Consols Mine. His Honour explained that the official liquidator had classified the contributories—Class A, or present shareholders; and Class B past shareholders, who, by *bona fide* transfer or relinquishment, had ceased to be so. The present shareholders have paid all the debts, and the question was whether these (Class A) could claim upon the past shareholders (Class B) for their unpaid proportion of expenses incurred in working the mine whilst they (Class B) were shareholders. The question of adjustment, *inter se*, of present and past shareholders as contributories in a cost-book company had not before been discussed. In a common partnership, dissoluble only by common consent, the proposed adjustment is reasonable; but where, as in a cost-book company, an unqualified right of transfer is an admitted custom, the discharge of the past shareholder must be complete as between him and the future shareholders, or any of them. Taking all things, including the several clauses of the Acts of Parliament, that might possibly bear upon the question, his Honour decided that there was no ground to warrant the liquidator in calling upon past shareholders to continue to contribute towards the payment of the calls by which the liquidator has, in fact, satisfied all the debts of the company, out of the pockets of the existing shareholders. It makes no difference whether the shares have been got rid of by *bona fide* transfer or relinquishment; but it is possible that between an outgoing shareholder and the company a claim for adjustment might stand. His Honour condemned the practice of making calls far short of the debts—the managers relying on the loans of a country banker, to avoid alarming their co-adventurers by heavy calls. He declared the judgment final, except on appeal to the Lord Warden, and ordered the costs of the official liquidator and of the past shareholders who opposed the application to be paid out of the assets of the company.

**TESTED BOILER-PLATES.**—With reference to the prevention of boiler explosions, it is suggested that the thorough testing of the plates of which they are constructed is of the utmost importance. The powerful testing machinery of Mr. DAVID KIRKALDY is already known to everyone connected with the iron trade, and the reputation he has acquired is sufficient to place his reports beyond suspicion. Taking these facts into consideration, it is observed that consumers of iron have an opportunity now which hitherto was not possible of knowing exactly the merits of what they are using. If they do not avail themselves of the opportunity they will be far from wise, and it is thought that the existence of such an institution as that established by Mr. KIRKALDY only requires to be better known to cause all parties interested in having really good material to insist upon their being submitted to such a test.

**MANUFACTURE OF IRON AND STEEL.**—The results obtained in the manufacture of iron and steel, according to the inventions of Mr. JOSEPH HENDERSON, of Auchencarr, Castle Douglas, are stated to be excellent. He intends to have samples of the metals produced analysed and tested forthwith, so that full particulars will shortly be published. We understand that the effect of his compound fuel and flux blast adapted to the ordinary blast-furnace, which is admitted near the zone of fusion, is something wonderful on the yield and quality of pig produced, and effects a great saving of solid fuel and fluxes.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE

MR. FREDERICK SMITH.

After serving Lord Dudley for a quarter of a century, Mr. FREDERICK SMITH will at Christmas resign the active direction of his lordship's vast mineral and iron-making property. For more than 20 years before the death of his father (Mr. Richard Smith), which took place in July, 1868, Mr. Frederick Smith had the management of the coal, limestone, and fire-clay property, and for a-third of that time the direction of the iron works. Indeed, during several years the chief management of the extensive concerns which Earl Dudley owns in South Staffordshire and East Worcestershire has devolved upon him, for Mr. Richard Smith had gone into retirement four years before his death. This, it will be in the recollection of our readers (see Vol. XXXVIII, p. 534), occurred at Shenstone Hall, on the estate which Mr. Frederick Smith now inherits, near to Lichfield. Mr. Richard Smith had served his noble master nearly 30 years. Assisted, as we have seen, by his son during much of that period he had developed the property to its present immense worth from a comparatively profitless concern. The father had trained the son by putting him through almost every one of the different offices filled by the various servants of the earl. Thus, with the education which made him a Fellow of St. John's College, Oxford, he was in every way fitted to take the management of a business requiring the labour of from 6000 to 8000 hands, directed immediately by between 200 and 300 sub-agents—a business which in its mining department has 300 fixed drawing-engines, 34 miles of railway, worked by a dozen locomotives, made, like all the similar requirements, on the estate itself—a business, moreover, which in its iron-making department embraces seven blast-furnaces, together with mills and forges, than which for the class of goods produced there are nowhere their superior. Of such a business it is that Mr. Frederick Smith is now about to relinquish the active direction.

Anticipating the step he is now about to take, he has for a long time been so arranging matters that Mr. Fisher Smith, his cousin, should be able to take up the management at the point at which he leaves it. Mr. Fisher Smith, who is Mr. Frederick Smith's senior in age, has, too, been for many years in Lord Dudley's employ, has for some time filled, and still fills, posts of great trust and responsibility, and will be placed at "The Priory" by Mr. Frederick Smith, with the fullest confidence on his part that in no respect will either the noble proprietor of the property or the hundreds of sub-agents and the thousands of workpeople in any way suffer by the transfer of authority. Mr. Frederick Smith upon leaving The Priory, which is the Dudley residence of the chief agent in the direction of Earl Dudley's business affairs, will reside upon the estate near to Brighton of which he has recently become the owner. For some time after Christmas he hopes to pay frequent visits to Dudley to advise with Mr. Fisher Smith, and by degrees settle down into something like the position of consulting manager to the Earl of Dudley, from whom, in a business capacity, there is no likelihood of his becoming detached during the life-time of either.

It had somehow got abroad that Mr. Smith was about altogether to sever his connection with the Earl of Dudley, and with the borough of that name. We have reason to know that such an intention is quite foreign to him. It would grieve Mr. Smith not a little to so violently sunder the many ties that bind him to a staff of co-workers, from whom he has ever received the readiest and most efficient help, and for whom he will ever entertain the strongest personal regard. As we have shown, although, by-and-bye, Mr. Fisher Smith will be the active chief agent of Lord Dudley, yet Mr. Frederick Smith will never during life be disassociated from the concern. And he will retain his part in those local matters in connection with which he has long been conspicuous. For instance, he will remain the captain of the Dudley squadron of Yeomanry; he will take his share in the management of the business of the counties of Worcester and Stafford. In the first he is a magistrate, and in the other a deputy-lieutenant. At this his present neighbours, and his numerous other friends in those counties, will experience much satisfaction. The esteem of the former was abundantly shown when they selected him to be the first Mayor of Dudley, and subsequently, by a memorial

which left little room to doubt of its foreshadowing success, requesting him to stand for the representation of the borough in Parliament. That memorial we felt it our duty in the interest of the coal and iron trade to support, for a fitter man could not be sent up by such a constituency. Mr. Smith, however, declined to be put in nomination, from a feeling of delicacy, lest his position as the active chief agent of Earl Dudley might interfere with certain duties which it might be thought he owed to the people whom he represented. Such motives for declining to stand for Dudley when the time comes will not again prevail. We think that Mr. Smith will not then refuse to serve the borough in the Lower House. It may not, perhaps, be amiss here to mention, that it has reached us that after Christmas Mr. Smith, in obedience to the repeated wish of his father, will incorporate with his present name that of "Shenstone." Of this desire on the part of Mr. Richard Smith explanation is found in the designation of the estate near to Lichfield, where at home Mr. Richard Smith spent his last hours. Mr. Smith will retain his post of Chairman of the Iron Trade of South Staffordshire till the close of his year of office, which likewise terminates at Christmas. He never entertained any idea of doing otherwise.

The state of the Iron Trade is, on the whole, not satisfactory. The considerable orders received in the early part of the quarter have enabled most of the works to continue in tolerably full operation, but the demand shows signs of falling off. At this season of the year there is generally a good deal of pressure to complete orders for the winter supply of iron to Germany, but the war and the blockade have together kept away all orders for that country. The ports will now be open, but there is little hope that orders will come so long as it remains uncertain how long the struggle will last, and especially as the army withdraws the men who conduct the commerce of the country. In a short time the shipment of goods to the Baltic ports will cease, so that there is every reason to anticipate the usual quietude before Christmas.

There was a good attendance on 'Change on Thursday, and the prospects of trade were freely discussed. Business during the earlier portion of the day was rather limited, but on the news of the further reduction of the rate of discount a marked change took place, and transactions were more numerous. Pig-iron remained in much the same state as reported for the last few weeks. Sellers quoted late rates—£1, 12s. 6d. to £1, 15s. for all mine, 4½ for hematite, and 3½ to 3½ ½ for clender; but these rates were for the most part nominal, as the market tended in favour of buyers. The demand for shipping was rather limited, but a fair quantity of orders was reported ready for shipment to ports not blockaded, and manufacturers have hopes of more when these are off their hands. The home trade seems to be in a very good condition to judge from the orders placed, which are principally for engineering, bridge, and girder purposes. The demand for plates, angles, tees, &c., was well maintained, and some good specifications were given out to tube and strip makers. Bars remained firm, best qualities being at list rates, and others at from 7½ to 7½ ½. Plates and sheets were quoted at 8½ ½, at the works. Ores met a good demand, at full prices.

The question of the demand of the men for an increase of wages was considered at the meeting. The opinion was unanimous that the demand was untimely, and compliance with it impossible; it was, therefore, resolved that, "as the present state of the Iron Trade is even less prosperous than it was before the outbreak of the Franco-German war, and has not (except at some few works where special qualities of iron are manufactured) been sufficiently prosperous to enable masters to obtain the full price declared in November, 1869, when the puddlers received an advance of 1s. per ton, and millmen 10 per cent., prices will remain as they are." The question of wages, regrets that for the present it is impossible to entertain any application for a further advance. The position of the trade is so well known to the men that it is believed no demand would have been made but for the exertions of agitators from the North, where a similar step is in contemplation.

The Hardware Trades of South Staffordshire are rather quieter. The Australian market is now considerably depressed, and the orders for the United States are of less amount. Except to Russia, to which considerable supplies of railway plant are being sent before the close of the ports, scarcely anything is doing for the Continent, and we cannot hope for a speedy restoration of trade with the two countries which the war has so fearfully affected.

The Dudley Correspondent of the *Wolverhampton Chronicle* writes:—

The forges and mills west of Dudley are in fair operation, and the men are doing "five turns" per week. The demand is chiefly for the lighter sorts of iron, such as rounds, flats, squares, guide iron, angle iron, and sheets. The large plate-mills are only in partial operation. It seems rather likely that now, and for some two or three months to come, the trade will continue to improve. The Preliminary Meeting of the Ironmasters' Association will take place at Birmingham on the 29th, and, no doubt, prices will remain as they are. "The common Staffordshire bars for the works, 8½; best bars, 9½; sheets, 9½ ½; doubles, 11½; nail sheets, 9½; latting, 12½ ½; boiler-plates, 9½ ½; rods, 8½; hoops, 8½; gas strip, 8½ ½; and all other sorts in proportion. Second and third class manufacturers are selling below these rates, but the leading houses will not depart from the official list. Some of the men still continue to agitate the question of a rise of wages, whilst there are others who refuse to take any part in the movement, considering it an unwise step. A high rate of wages always lessens the demand for the article by advancing the price, or drives the sale of it into other districts, where it can be had cheaper. There is such a thing as "killing the goose that lays the golden eggs." It is far better to wait and see the course things will take on the Continent, and how far they will act upon trade, leaving the result in the hands of the masters, who are always alive to their own interests. If prices advance, as a consequence the wages of the workmen will follow; one is the natural result of the other. To raise the price of iron or the rate of wages at present would be suicidal, and stagnate the trade, as it did after the last advance. The Trade Union for pig-iron is sluggish, and the negotiations which were on with a view to re-light some of the furnaces in the neighbourhood have been suspended in consequence of the war. The market for coal is daily getting brisker, and the merchants in the Midland district are commencing stacking against the cold weather sets in, as they found some difficulty in getting their proper supplies last winter. There is pretty good demand for labour, and the large "fitting yards" are full of hands pushing forward contracts.

**THE DUDLEY INSTITUTE OF MINING ENGINEERS.**—The members of this institute held their last monthly meeting at Wolverhampton, on Sept. 7, when it was arranged that the Dudley Geological Museum should be rented for the use of the institute in which to hold their meetings. This step was considered extremely desirable from the circumstance that a museum possessing so fine a collection of minerals and fossils from the coal measures and Silurian beds of the district would be an invaluable association to a practical mining institute like the Dudley one.

The Honorary Secretary (Mr. Henry Johnson) reported that the last extension of the year would take place on the 19th and 20th of this month to the Raabon Coal Company's celebrated Deep Pit, at Ruabon, North Wales. These pits, we were informed, are about 720 yards deep, and have cost more than 100,000£, and are now just beginning to raise coal. We understand this is the most complete and largest coal-winding plant in North Wales, and has been successfully developed under the management of Mr. R. C. Webster, who has kindly thrown it open to the Institute. The party, after inspecting this extensive colliery, will rest for the night at that queen of valleys, Llangollen, visiting the far-famed Chirk Castle, and proceed next day (Tuesday) to Baginbun, near Holywell, on the North Wales coast, where a very curious and enterprising sinking is being made, while sinking it appears, being made through the sea water, so as to recover a large tract of coal lying under the estuary of the River Dee. The sinking has been successfully effected by a very powerful pneumatic apparatus, under the management of Mr. J. T. Woodhouse, of Derby, and Mr. J. T. Johnson. The shaft has been carried through the sea water, and is now being proceeded with in the coal measures proper, and the sea water has been stopped back. The party after inspecting this very interesting piece of mining engineering will return on the Tuesday evening. Probably two more interesting *excursions* of mining enterprise could not have been selected for the edification of the members, and we shall hope to give our readers a full detailed account of them after the excursion has taken place.

#### REPORT FROM SCOTLAND.

Sept. 14.—Our Pig-Iron Market closed last week steady, with easy prices; but on commencing business this week warrants hardened to 51s. 10½d. cash, which was the closing price on Monday. Yesterday the market was easier, and a few thousand tons changed hands at 51s. 8d. cash, closing sellers 8d. more. To-day the market has been rather firmer, but very little doing; a few lots were reported at 51s. 9d. to 51s. 10d. cash, closing sellers 51s. 10d. cash, and 52s. 1½d. a month; buyers, 1d. less. No. 1, g.m.b., 52s. 6d.; No. 3, 51s. 9d.; Coltness and Gartsherrie, 60s.; Eglinton, 52s. 6d. This week we have to note an ominous falling off in the shipments of pig-iron from the Scotch ports, the quantity returned being only 10,077 tons, against 16,267 tons in the corresponding week of last year, which shows a difference of 6190 tons, and brings up the decrease in the shipments of the year to date to 33,981 tons. Since the beginning of the year there has been an increase in the imports of Middlesbrough pigs of 16,341 tons. In finished iron there is almost no change—things rather flatter, and plates can be bought on easier terms. There have been some shipments of fencing bars; and the proposal to admit all kinds of manufactured iron into New Zealand free is expected to be of some advantage to the trade here. If war was at an end, there is reason to expect an enlargement of several of the works in this neighbourhood; and the very extensive additions and new and improved appliances in course of completion at Blochairn will render that firm capable not only of increasing their production, but also of producing a superior iron.

The puddlers and other ironmakers are still pushing their claim for an advance of wages, and a settlement of the grievances for which they underwent the recent lock-out. We are informed that Mr. John Kane, of the Board of Arbitration for the North of England, had an interview with Mr. Burns, of the Ironmasters' Association, with the view of arranging preliminaries for a settlement. Fourteen days are allowed to get up proof *pro and con*, and six days



are to be given afterwards for the arbiter to announce his decision. Mr. George Anderson, M.P. for this city, has, we understand, undertaken the duties of umpire. Such being the case, we may hope to see the matter settled before many days.

In Coals we have still to report a languid business, and although shipments keep nearly up to last year's average, there is rather a falling off than an increase on the average. During the week the shipments amounted to 24,034 tons, against 23,057 tons in the corresponding week of last year. The Leamohagow and Longlee Coal Company having for about two years past been shanking for gas coal on part of the estates of Hamilton and Blackwood, adjoining the famous field of Auchinheath gas coal, had the satisfaction, on Saturday last, of finding a seam of main gas coal, in excellent position and of fine quality, in their No. 1 Pit.

The Messrs. Baird, Gartsherrie, are erecting a commodious school-room at Douglas, for the benefit of the children of their workmen, who are in the meantime compelled to travel to Kilsyth, a distance of two miles from their residences. The strikes in the Airdrie and Slamannan districts may be said to be at an end, the men having gone in on the same terms as those on which they left, after subjecting themselves to a seven weeks' strike. One of the causes of the strike was the election of the miners from their houses, and they betook themselves to camping in fields and plantations, to enlist the sympathy of passers at their forlorn condition. Two of these campers were brought before the Sheriff at Falkirk last week, charged with unlawfully encamping in a plantation on the lands of Drumblair, Slamannan. The agent for the accused moved for an adjournment, when the Sheriff, on the motion of the Procurator-Fiscal, desisted the *pro loco tempore*. The dispute amongst the miners at North Motherwell Colliery has practically been brought to a conclusion, the men having asked to be allowed to commence work.

A magnificent four-decker mail steam-ship has been launched on the Clyde this week, for Baird and McIver's Atlantic Mail Service. She was named the *Parthia* is upwards of 3000 tons, and will accommodate about 1200 passengers in addition to her crew. The *Parthia* is one of four vessels of similar capacity which this firm intend adding to their present fleet, and which will not be excelled by the steamers of any other company in the world. A new steamer of 2240 tons was launched to-day for the North German Lloyd's Steam Packet Service, and was named the *Prinz* as she glided off the stocks.

**NEW RAILWAYS.**—We understand that the extension of the Callander and Oban Railway from Killin to Tyndrum—a distance of about 17½ miles—will commence immediately. Other two new lines are also contemplated—one from Callander to the Trossachs and Loch Katrine; and the other from Aberfeldy to join the Callander and Oban Railway at Lulb, about 7 miles north-west of Lochearnhead. The first-mentioned railway, between Callander and the Trossachs, would be about 9 miles in length, a single line, and the estimated cost is about 4000£ per mile. With regard to the other line, from Aberfeldy to Lulb, the distance would be about 26 miles. It would be easily constructed, and is estimated to cost about the same as the one to the Trossachs.

#### REPORT FROM MONMOUTH AND SOUTH WALES.

Sept. 15.—There appears to be a little more activity evinced in the Iron Trade, and there is reason to think that prospects are somewhat more encouraging than they were two or three weeks ago considered to be. Attention continues to be centred upon the progress of the war, and both makers and buyers are using every effort to foreshadow the actual course of events; and the general belief seems to be that a few days more will witness the conclusion of the war. There is some slight improvement evinced in the demand, and fresh specifications have begun to arrive. There is, however, a marked absence of contracts of anything like the usual magnitude, but such orders as are now coming to hand are sufficient to keep up a considerable degree of animation at the various establishments of the district. There are, therefore, no signs of a prevalent, and uneasiness in the approaching winter, as was alluded to in a previous report. From the French markets there are no orders of any description, and comparatively few from any of the other continental markets. Up to the present time clearances have been chiefly to the Russian markets and to the United States, by far the greatest quantities having been forwarded in the direction of New York, New Orleans, and Mobile. American shipments have latterly, however, been slightly delayed, in order that the Russian engagements might be pushed forward towards completion. Orders from these sources are still in hand, but few of recent date, and upon these the works have chiefly been employed for the last five or six weeks. The other engagements, which were secured before the commencement of the war, are still being rapidly proceeded with, and, although they are not yet being satisfactorily replaced, there are not wanting signs that some important specifications will be received before they are cleared off altogether. The Russian demand will, as usual, be lessened during the winter, as few, if any, clearances can then be made to the Baltic ports. Still, there can be little doubt but that large requirements have yet to be given out on account of the lines of railway which are in progress in the Muscovite territory, and which will have to be delivered in the early part of next year. Preparations are also being made for increased enquiries from the United States and the colonies, and, if expectations are realised, there will not be much ground for complaint for some time to come, at least. If, again, the war is brought shortly to a close, in accordance with the general belief, all apprehensions in regard to the future will, no doubt, be cleared up, and a large increase of business from all sources, undoubtedly, take place.

In the home trade things wear a more cheerful aspect than for some time past, orders being now given out with tolerable freedom, and although the specifications are small they are replaced as soon as executed. The several reductions made in the rate of discount have had the expected effect on the home markets, and a greater degree of activity will, no doubt, continue to prevail. A fair demand is reported for all descriptions of finished iron; but some slight reduction in prices are accorded to by makers, with a view chiefly to keep up connections during the present unsettled state of affairs. Bars and plates are in average request, and pigs for local consumption are fairly enquired for. There is but little, if any, alteration to be noticed in the Tin-Plate Trade. Most of the works continue fairly employed, but complaints are prevalent of the high price of tin.

Much of the attention of the Iron Trade has latterly also been drawn to the meeting of the Iron and Steel Institute at Merthyr, and the event was, undoubtedly, a success, and some interesting details will be found in the Supplement to this week's Journal. The week's proceedings came to a close on Friday. On Thursday the party had an excursion to Swansea, where, after visiting the various iron and copper-producing establishments of the neighbourhood, they were entertained at luncheon by the Mayor (Mr. J. J. Jenkins) of Swansea. In the evening of the same day they were also entertained at a banquet by the ironmasters of Merthyr, at which Mr. R. Fothergill, M.P., presided. On Friday morning the party left Merthyr by an early train, to pay a flying visit to the principal Monmouthshire works. At Ebbw Vale they were met by Mr. Alderman Curtis, of Manchester, Chairman of the Ebbw Vale Iron, Steel, and Coal Company (Limited), whose extensive works were inspected. The new steel works, which the Bessemer process is in operation, attracted much attention. An object of considerable interest also was the great blast-engine, known as the "Darby" engine, which is, undoubtedly, one of the largest of the kind in the world. It has a stroke of 12 feet, and is capable of being worked to 1000-horse power. As showing the vastness of the works of this company generally, it may be said that an average of 130,000 tons of rails are turned out annually, 1,250,000 tons of minerals are raised annually, and while no less than 750,000£ sterling is paid in wages. The weather, however, being somewhat unfavourable, and some departments were not inspected. In the afternoon the party, numbering about 180 persons, were again entertained at a banquet by the company, at which the chair was occupied by Mr. Alderman Curtis, the newly-elected Chairman of the company. The healths of the Chairman, Mr. Abraham Darby, and Mr. Bessemer, were drunk.

Upon the whole, the Steam Coal Trade may be said to have maintained its position during the week, and the collieries are generally fairly employed. There is, however, a little quietude evinced in some directions; but, on the other hand, the mail packet depôts are taking increasing quantities. There is less difficulty experienced than for some time past in regard to quotations, and prices are, as a rule, sustained. Opinion is still divided as to whether the coal trade would be most benefited by a continuance of the war or otherwise. The purchases of the several continental Governments have, no doubt, added to the demand, and it is questionable whether these purchases exceed those that would have been made for industrial purposes had the war not broken out. In regard to the house coal trade, purchases are beginning to be made for winter requirements, and more activity is expected.

An important discussion was entered into at the Quarterly Meeting of the Newport Chamber of Commerce, on Monday, respecting the merits of Newport coals as compared with Cardiff or North Country coals. Considerable dissatisfaction was expressed at the fact that since the accession of the present Government to office scarcely any coal had been obtained from Newport for the Government ships, although formerly largely supplied. Statistics, which are referred to in another part of the Journal, were produced, showing the relative merits of the Monmouthshire coals in the late trials, and it was contended that the best mixture that could be made would be the combination of the semi-anthracite coals shipped at Cardiff with the semi-bituminous coals shipped at Newport. A committee was formed to move in the matter.

An immense casting has just been turned out at the establishment of Messrs. Winby Brothers, Cardiff, consisting of a cylinder, forming part of the steam-hammer in course of construction, and which is intended for the Baltic Iron Works. The cylinder will be 45 in. diameter, stroke 10 ft., thickness of metal 3 inches, and weight 18 tons.

The returns of the trade of the local ports for the past month show an appreciable increase as compared with the corresponding month of last year. The exports of coal were as follows:—Cardiff, 228,245 tons, against 216,326 tons in August, 1869; Swansea, 75,461 tons, against 69,405 tons; Newport, 33,353 tons, against 30,46 tons; and Llanelli, 12,766 tons, against 10,747 tons. The shipments eastward were as annexed:—Cardiff, 99,967 tons, against 73,676 tons; Swansea, 21,16 tons, against 21,911 tons; Newport, 73,211 tons, against 72,082 tons; and Llanelli, 23,132 tons, against 6,778 tons. Cardiff also exported 19,921 tons iron, and 240 tons patent fuel; Swansea, 2477 tons iron, and 12,462 tons patent fuel; and Newport, 20,325 tons iron.

The arrivals at Swansea include—The *Lorenzo Sempreur*, from Bilbao, with 400 tons of iron ore, for J. Strick. *Lilla*, from Bilbao, with 125 tons of iron ore, to order. *Bon Paysant*, from Redon, with 65 tons of iron ore, for R. Crawshaw. *Vigilant*, from Santander, with 127 tons of iron ore, for J. Brogden and Son. *Fairy*, from Bilbao, with 115 tons of iron ore, for T. Wood and Co. *Edmond*, from Bilbao, with 130 tons of iron ore, for T. Wood and Co.

Mary Ann, from Lota, with 140 tons of ingot copper, and 280 tons of bar copper, for H. Bath and Son. *Philomene*, from Bilbao, with 175 tons of iron ore, for H. Bath and Son. *Oseola*, from Cardiff, with 351 tons of zinc ore, for H. Bath and Son. *Capricorn*, from Hueso, with 581 tons of copper regulus, for Elford, Williams, and Co. *Bon Henri*, from Couerou, with 192 tons of lead ore, for Richardson and Co. *Solway*, from Cardiff, with 130 tons of zinc ore, for H. Bath and Son. *Flora*, from Cardiff, with 400 tons of zinc ore, for H. Bath and Son. *Corinna*, from Carrizal, with 480 tons of copper regulus, and 250 tons of bar copper, for H. Bath and Son. *Harriet Williams*, from Cardiff, with 302 tons of zinc ore, for Richardson and Co. *Prince Alfred*, from Charnal, with 770 tons of copper regulus, for Elford, Williams, and Co. *Ocean King*, from Hondeklip, with 590 tons of copper ore, for Richardson and Co. *Joseph Thompson*, from Carrizal, with 580 tons of copper regulus, and 60 tons of pig lead, for H. Bath and Son. *Lient*, Maury, from Montreal, with 395 tons of zinc ore, for Richardson, Power, and Co. *Ottawa*, from Montreal, with 355 tons of copper ore, for Richardson and Co. *Foxhound*, from Carrizal, with 690 tons of copper regulus, for H. Bath and Son. *Maravilla*, from Tocopilla, with 680 tons of copper ore, 265 tons of copper regulus, &c., for Richardson and Co.

#### REPORT FROM THE NORTH OF ENGLAND.

**Middlesborough, Sept. 15.**—The general appearance of the trade of the North has not altered since last week, the news from the seat of war not having been such as to cause any material change in the state of the market. The attendance on 'Change at Middlesborough, on Tuesday, was numerous, and rather more iron is said to have changed hands than at any of the very recent meetings. Some houses cannot be induced to book orders, even for immediate delivery, under 48s. for No. 3, and proportionate prices for other numbers, while other sellers have accepted as low as 47s., and 46s. 6d. in an exceptional case or two. There is, however, an impression that if hostilities on the Continent were at an end, pig-iron rates in Cleveland would quickly stiffen, and improve considerably; for on the re-opening of German ports a large quantity of pig-metal must at once be sent in, in order to satisfy the pressing requirements. The blast-furnaces continue in full operation, and the number now blowing is to be increased shortly by the commencement of two new ones by Messrs. Gilkes, Wilson, Pease, and Co., at Tees-side. Other furnaces in course of erection in the district are being rapidly pushed forward. The two new ones of Messrs. Giers, Mills, and Co., of the Ayresome Iron Works, show considerable progress, and look a very nice compact property. It is anticipated to have these furnaces ready in January next. The various mills in the neighbourhood are all in steady operation. Fresh enquiries for rails for Russia are to be heard of, but there is no probability of these orders being given out before the termination of the war. Shipbuilders are reported to have recently received some new enquiries. We understand that another war vessel, of the *Cerberus* class, is to be built by Palmer's Shipbuilding and Iron Company (Limited), at Jarrow-on-Tyne. The first ship of this description was built by that firm, and gave so much satisfaction that an order for the construction of a second by the same company has now been given by the Admiralty. There are now, we believe, five vessels being built on the Tyne for the Government.

The Coal Trade of South Durham has not as yet suffered very severely from the effects of the present struggle between France and Germany. It has, doubtless, been influenced by the unfortunate dispute, but not to that extent anticipated by some writers at the commencement of the combat. The generality of the pits are working good fortnights, and getting a good average quantity of coal. For coke there is an increasing demand, and the present heavy make is about to be enlarged by the erection of additional ovens, as we stated in a recent letter, by Messrs. Bolckow, Vaughan, and Co., and Messrs. Pease and partners.

Near to the Sheldon station of the Stockton and Darlington Railway Mr. Charles Attwood recently bored for coal, and after driving some 10 or 11 fms. proved a bed of a satisfactory thickness, and he intends, we learn, to put down a shaft and work the coal. This seam will, we believe, be the Brockwell seam, and the pit will be sunk near the outcrop, and under what is known as the Middridge royalty.

The following is Mr. C. E. Muller's report for August:—The tone of this market still continues very uncertain. A good deal of buying has been going on during the last few weeks, but prices have not stiffened, some makers showing a disposition to dispose of their produce at comparatively low rates, rather than wait the result of the war. For immediate delivery, Forge No. 4 has been sold at 45s. 6d. per ton cash; No. 3 Foundry at 45s. 6d. For next year's delivery, higher prices are paid—No. 3, 45s. 6d. to 46s.; No. 4, 47s. 6d. to 48s.; other qualities in usual proportion. These 1 put down as lowest prices that have been accepted. With 108 furnaces in blast, we have the following figures for the month of August:—

	Production.	Ship. foreign.	Ship. coastwise.	War. stores.
Aug 31, 1870...	145,265	8,810	13,150	14,139
Aug 31, 1869...	129,814	21,255	10,810	15,139

Increase 24,451...Decrease 12,446...Increase 2340...Decrease 1000. With the falling off in shipments abroad, our heavy "make" is now beginning to tell on stocks. Makers have increased 11,334 tons, less 1000 tons decrease in store. Net increase, 10,334 tons; increase last month, 814 tons; total, 18,477 tons. During the first six months of the year we took 28,814 tons of the stock, in the face of a largely increased make, so that the present increase is looked upon by some as a matter for congratulation. The working stocks in Cleveland were reduced to a dangerously low figure, as I frequently pointed out in past years; even now our total stock is only 92,405 tons. The 5-ton Bessemer works are seriously affecting our exports. Germany is much in want of iron, but all her ports are closed; while in France industry is at a complete standstill. Belgium is also partly stopped. Should peace be proclaimed soon we shall see a brisk trade, at all events with Germany. She is in great want of coals, coke, and pig-iron, and as the shipping season is but short there will be a strong demand for steamers, and freights will probably run high.

**WARRANT STORE.**—Referring to my remarks on this subject in last month's report, I have since heard it mooted that when the proper time arrives Messrs. Connal and Co., of Glasgow, should be invited to undertake the storing of iron in this district, on the same plan so long and so admirably practised in Glasgow. Without venturing an opinion on this point, I would suggest that our Chamber of Commerce might, perhaps, appoint a committee to confer with the North-Eastern directors on the subject. It would be a pity to shelve a matter of such importance until some satisfactory solution be arrived at.

#### TRADE OF THE TYNE AND WEAR.

Sept. 15.—The arrivals of vessels have been large in these rivers this week, and there is really extremely little demand for them; terms are long, and freights have nearly reached the low level they were at previous to the war. The Chemical Trades on the Tyne continue very dull, but most of the foundries and engine works are well employed. Iron shipbuilding is also pretty brisk.

A movement has commenced for the purpose of arranging, if possible, for the payment of wages weekly instead of once a fortnight, as has been the custom universally here. What advantage the men expect to derive from this movement it is really difficult to perceive; however, the agitation has commenced, and a representation meeting was held in Newcastle, on Saturday, at which there was a good attendance. It was reported that one firm had granted the boon, and others were favourable to it; and in every instance the masters had courteously received the men appointed to wait upon them. It was resolved at the meeting that a committee be appointed to carry on the agitation, to consist of one man from each of the works in the district, with a treasurer and secretary. Men from the following large works were elected on the committee, with power to add to their number:—Messrs. Thompson, Boyd, and Co., Abbot and Co., Black, Hawthorn, and Co., Armstrong and Co., R. and W. Hawthorn, Bell, Gordon, and Co., Walker Iron Works. Mr. H. W. Surtees was appointed secretary.

A strike has taken place at the Sheriff Hill Colliery, near Gateshead. A statement has been put forth by the men, that an attempt was made by the leasee to effect a considerable reduction in the amount of their wages, and this the men resist; they have, indeed, struck, and are supported in this step by the Durham Miners' Mutual Confidence Association, of which they are members. The seam worked is the High Main, a large seam, but unfortunately it is divided and much reduced in value by a band at this particular place, and even the thickness of this band varies considerably, so that it really is difficult to estimate what the price ought to be at particular times, owing to this circumstance. In some cases at the Sheriff Hill Colliery, too, the top coal only is worked, and the band is taken up to make height for the tubs, and the bottom coal is left altogether; and this we believe is the exact position of the works where the present dispute has originated. Unless the men prove willing to take a reasonable course, and meet the owners on fair terms, there is little doubt this seam will be abandoned, as it is difficult and expensive to work, and very little, if any, profit can be got by working it. There are several other good seams in this colliery, especially the famous Hutton seam, and a considerable amount of coal remains in most of them; but in order to reach and work this coal it will be necessary to erect a pumping en-

gine of moderate power in order to remove the water, and no doubt this plan will ultimately be adopted; at any rate, it is the only course open to make the work really valuable, and the aggregate feeders of water, after the removal of the standing water, which has accumulated for the last 20 years, are not considered to be large.

The export trade in Coal is extremely dull, considering the time of year, and this is owing in a great measure to the want of confidence caused by the war, merchants being extremely unwilling to enter into engagements. However, as remarked above, the works generally are well employed, and not many complaints are heard of the colliers, they are, generally speaking, pretty well kept going, the coke, and house, and manufacturing coal trade continuing very brisk.

The Iron Trade continues to show weakness, and stocks of pigs are increasing; prices, however, have not receded much lately—indeed, they cannot possibly be reduced much more, and the total amount of stocks held are not of the slightest consequence if once the war was concluded. If this were once effected a rise in prices would immediately take place. The demand for rails, ship-plates, &c., continues good, but the shipment of rails is much retarded owing to the blockade; it is, however, hoped that the blockade of the Elbe will soon be ended, if that has not taken place already, and some business may yet be done in that quarter before the closing of the waters for the winter.

A Boiler Explosion of an awful character, and attended with very lamentable results, occurred at Messrs. Bell, Goodman, and Co.'s Walker Iron Works, on Wednesday afternoon. Four men were killed by this explosion, and fifteen men and boys were injured, some so severely that they have, indeed, since died. From particulars I collected on the spot on Thursday, it appears that the inspector connected with an insurance company, examined the boiler about a fortnight ago, and recommended that several plates should be taken out, and replaced by new ones. The boiler was, therefore, laid off and repaired, but to what extent is not yet explained, and on Wednesday morning the water was put in, and the fire lighted. When the explosion occurred the boiler was not coupled with the other ones, but the men were in the act of attaching it. The boiler itself was lifted entirely from its bed, and rent and divided into a considerable number of fragments, those pieces being flattened out in a most wonderful manner, so as to resemble sheets or plates rolled, instead of being turned into the form necessary for constructing a boiler. One end of the boiler, also, had been driven in a horizontal direction with immense force, as the heavy and massive obstructions it displaced sufficiently prove. The roof for a length of 80 yards is entirely blown off by the force exerted upwards, and everything about the works proves most clearly that a most enormous force has been pent up, and suddenly from some cause let loose, to carry destruction far and wide. The destruction to the works and adjoining buildings is very great, and also the injury to the lathes and other machinery inside the works is great. The inquest is not expected to be opened until to-day (Friday).

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 15.—There has been no change in the state of the Iron Trade in Derbyshire during the week, and, on the whole, a fair business is being done. The foundries in particular are kept well going, there being some tolerable orders in hand for various descriptions of pipes. The works at Staveley, one of the largest and most important in the county, are rather active, and an increased quantity of pig-iron will shortly be produced there. The value of the Northamptonshire ironstone is now being more fully recognised than it has been, and we understand that the Staveley Company has just entered into a contract with the Messrs. Butlin, of Wellington, for a continuous supply of their ore. Being of a highly silicious character, the Northamptonshire ore is admirably adapted for mixing with other ores which are more or less argillaceous. Another advantage gained by the use of the stone named is, that as Messrs. Butlin have four furnaces of their own, the wagons on returning from Staveley will convey the necessary coal and coke to Wellington. The House Coal Trade is now tolerably good, and is, of course, improving, and the season, seeing that the Great Northern cannot lower its rate from South Yorkshire to London, promises to be an active one. Steam Coal continues in rather brisk request, and a good deal is being sent to Grimsby. The running powers of the Midland over the Manchester, Sheffield, and Lincolnshire continues to be taken advantage of, so that both iron and coal are being sent by way of Sheffield to Glossop and near to Manchester.

The manufacturers of most descriptions of heavy iron goods in Sheffield continue to be fully employed, and are evidently likely to be so for some time. There has been no decrease in the business doing in heavy armour-plates, shields, and war material generally. Rails, and almost every description of manufactured iron for railway purposes, is in good request. The Bessemer Steel Works are now worked to their full extent, and have considerable orders in hand. At Rotherham the works are also kept very fairly going, and the collieries are doing rather more than they have been, more especially in steam coal; whilst household qualities have also improved of late. At Thornecliffe the men of foundry goods. There is some large orders in hand for various descriptions of foundry goods. There is now every appearance that the Escacore Iron Works will soon be in full and active operation. An extensive business is being done in them in plates and rails, whilst the output of puddled iron will be very largely increased by the working of the new Siemens furnaces, which are now in course of erection, and the completion of which is looked forward to with a good deal of interest in the district. The coal trade in what may be termed the centre of the North Yorkshire district is not so active as it has been, so far as the works are concerned, whilst there is a demand for all the steam qualities that can be raised.

**THE MINERALS ON THE MIDLAND RAILWAY.**—In noticing, a short time since, the minerals on that part of the Midland system extending from Leeds to Northamptonshire, it was intimated that a similar paper on the same subject with regard to other parts of that important line would be given. Accordingly, as of equal importance with the districts previously noticed, is that of Barrow, and in which locality there is the only firm in England producing charcoal pig-iron. Of the red hematite ore, which is amongst the most valuable in the kingdom, is raised annually about 750,000 tons, of which nearly 100,000 tons are sent by railway into Lancashire, Yorkshire, and Staffordshire, with 25 furnaces in the district, of which nearly one-half are those of the Barrow Hematite Steel Company, the works of which the Midland Railway is the life-line. The production of steel at those works is probably the largest in the kingdom, seeing there are ten 5-ton Bessemer converters at work. There is a good market for all that is made, the Midland Railway being more than any other line in a position to take the produce of the works to those important centres of consumption, Leeds, Sheffield, and Birmingham. The line also takes 50,000 tons of coal to Furness yearly. The importance of the Barrow district to the Midland will be apparent from the above facts, and which will be still further increased when the new works at Pease are in operation. At Settle, from which line is to be formed to Carlisle, there are some beds of good coal, but as yet not much worked, but which, with railway accommodation at the North, will be brought into requisition. Proceeding southward, after leaving Derbyshire, the Midland passes through Tamworth and Nuneaton, where there are several collieries, two of which belong to Mr. Newdegate, M.P. At present about 70,000 tons from those districts pass over the Midland line annually. Taking the western part of the system, the railway goes from Birmingham to Droitwich and Stoke Prior, from which stations a large quantity of salt—the only marketable produce of those places—is sent to all parts of the kingdom, the annual production being 250,000 tons a year, nearly all of which goes over the Midland. The next important mineral district through which the line passes is between Gloucester and Bristol, and Mangotsfield and Bath, at which place there is a very extensive coal depot.

The coal field from Yate to Bristol is now becoming a very important one, the minerals being now developed to a much greater extent than they have been hitherto, whilst there are vast tracts of highly mineralised ground as yet untouched, and which it will be for the enterprise of the next 50 or 60 years to open out to any great extent. At present about 250,000 tons of coal per year is conveyed over the Gloucestershire part of the system, but the quantity is rapidly increasing, as several of the collieries are extending their workings, and raising a very much larger tonnage than they have done before. Near to Yate, at Coalpit Heath there are several extensive pits, including those of Sir G. Smith, Bart., who is now raising nearly 200,000 tons of coal per annum. Near to Mangotsfield, are the extensive collieries of Wethered, Gosham, and Wethered, which produce about 150,000 tons of coal a year. At Wymley there are a few pits, and near to Bath there are the Easton pits, raising annually 70,000 tons. At all the places named the works are being extended, with a view to increasing as much as possible the output of coal. In addition to some 22 collieries in the Bristol coal field, several new concerns are being opened out, which will throw a good deal of traffic on the line. At Frampton Cotterell, from which there is a branch line to the Yate Station, there is a splendid field of fine hematite iron-ore, equal to any in the kingdom, and is now in course of development. The stone, equal to any in the kingdom, and is now in course of development. The important one, and add largely to the tonnage conveyed over that part of the Midland system. In addition to the rapidly increasing traffic from the districts above enumerated, it appears likely that the Midland will be able to compete before long for a share of the South Wales traffic by way of Brecon and Merthyr. At the present time, exclusive of the large tonnage of iron and ironstone carried over various parts of the system, the Midland is now carrying from different districts upwards of 6,500,000 tons of coal per annum. As most of the coal fields, however, are as yet in comparative infancy, and are being rapidly extended, the future position and prospects of the Midland are so apparent as not to require pointing out.

**ROLLING RAILS.**—The invention of Messrs. IBBOTSON and LINDSEAD, of Sheffield, relates to the arrangement of rails for manufacturing purposes. The inventors use three rolls whose shafts or axes are supported in a strong framing secured to a foundation plate, and which are geared to a horizontal position, the axes of the other two rolls being inclined. The portion in a horizontal position, the axes of the other two rolls being inclined, so that they will all three run properly together.



grooves are cut in each roll of such a form that the combined grooves in the two rolls give the desired three-headed sectional form to the rails passed between them. The two upper rolls are adjustable by means of screws, which are on the caps of their bearings, and the screws for each roll are geared by worm-wheels in connection with a screw rod provided with a winch or handle, whereby both screws can be operated at once.

**FURNACES.**—By the invention of Mr. G. JONES, Millwall, the furnace door is fixed in the ordinary way, and is constructed so as to leave an opening at the bottom bending inward to the furnace to admit air to the mouth of the furnace. Openings are made in the front of the furnace on each side of the door, and the door is fixed to the ash-pit to close the same. A vertical slide door is fixed between the furnace door and the ash-pit door, in order to regulate the draught under the fire-bar.

**PUDDLING IRON.**—Mr. A. PONSARD, Paris, proposes to combine the tubular stirrer, which is suspended at or near its centre gravity so as to be easily actuated, a coil of pipes, which is made to closely surround the fore part of the stirrer, through which cold water is caused to circulate, for the purpose of preventing the burning of the end of the stirrer. The stirrer itself is supported by a flexible pipe, or by a properly jointed metallic pipe, from an overhead fixed main pipe, extending along any number of furnaces, and supplied with compressed air from a blower or other source, such air passing down the interior of the stirrer into the liquid metal in the furnace.

**CHALLENGE TO THE WORLD.**—The *Bristol Daily Times and Mirror*, Sept. 15th, has the following: Messrs. J. C. Swan and Co., of 16, Queen-square, this city, have invented a pocket microscope, which is a marvel in all that it contains an instrument should be. It has great power, remarkable definition, and does not require focusing. The cheapness of the article will make it exceedingly popular when its merits are more widely known. It is called the "Bristol Microscope," and is a great credit to the inventor, as much for its extreme simplicity as its power. The *Western Daily Press* says: The Bristol Microscope is a magnifying power of 2,000 times, &c.—The *Western Daily Telegraph* says: The Bristol Microscope is the most compact and useful scientific instrument we have ever seen; it possesses extraordinary power, and is very easily managed. The price of the Bristol Microscope is only 2s., or free by post, with printed directions, for 2s. stamps.—Address, J. C. Swan and Co., Opticians, 16, Queen-square, Bristol.

**Birth.**—on Wednesday, Sept. 7, aged 71 years, Capt. SAMUEL BON-  
dell, of the Eton Mines, Ashbourne, Derbyshire. For a great number of years Capt. Bonnell has been intimately connected with mining enterprise in Derbyshire, and his great energy and experience caused his opinion to be very generally sought in matters of difficulty. He was recognised as a great friend to mining, and will be much missed in that community.

**RAILWAY WAGON WORKS, BARNSELY.**  
**MESSRS. G. W. AND T. CRAIK**  
ARE PREPARED TO  
**SUPPLY COAL AND COKE WAGONS**  
OF EVERY DESCRIPTION,  
whether for cash, or by deferred payments through wagon-leasing companies.  
**WAGONS PROMPTLY REPAIRED.**

**SEAHAM IRON WORKS,**  
**SEAHAM HARBOUR,**  
**NEAR SUNDERLAND.**  
**R. WIGHT AND SON,**  
IRONFOUNDERS AND ENGINEERS,  
MANUFACTURERS OF FORGED WORK OF EVERY DESCRIPTION.  
COLLIERY WORK PUNCTUALLY ATTENDED TO.

**STURGEON AND CO.,**  
**ENGINEERS, &c.,**  
**BOLTON.**  
Sole Manufacturers of the Patent Self-acting

**ORE CRUSHING AND PULVERISING MACHINERY,**  
Patent Air-getting Plant,  
Patent Air Compressing Engines,  
Patent Blowers and Exhausters, &c., &c.,  
"Dead Blow" Steam Hammer.  
Testimonials and Prices sent free on application.

**GLASGOW OFFICE: 127 and 129, TROGATE—**  
**P. and W. MACCLELLAN, Agents.**  
**LONDON OFFICE: 33, CORNHILL, E.C.—**  
**DONALD ATKEY and Co., Agents.**

**NOTICE.**  
**ROYAL CORNWALL POLYTECHNIC EXHIBITION.**—  
WORKING MODEL AND DRAWINGS OF THE PATENT ORE CRUSH-  
ING MACHINERY will be ON VIEW during the EXHIBITION.

**PISTONS, AND AIR-PUMP BUCKETS,**  
FITTED WITH  
"PATENT ELASTIC METALLIC PACKING,"  
Of which above FIVE THOUSAND have been made by  
**MESSRS. MATHER AND PLATT,**  
**SALFORD IRONWORKS, MANCHESTER.**

**MARTIN'S PATENT PISTON**  
FOR STEAM AND OTHER ENGINES,  
Effecting a SAVING OF FIFTEEN PER CENT. IN FUEL, with TEN PER  
CENT. ADDITIONAL POWER.  
Address—  
**MESSRS. WILLIAMS AND BOLTON,**  
**ST. HELEN'S FOUNDRY,**  
(Patent Piston) SWANSEA.

**WARTON NATIVE OXIDE OF IRON**  
IS SUPERIOR TO ANY OTHER PAINT IN  
BODY AND BRILLIANCY OF COLOUR,  
AND, UNLIKE LEAD PIGMENTS,  
IS INNOCUOUS TO THE WORKMEN USING IT.  
Prizes may be obtained on application to the agents—  
**H. J. WALDUCK AND CO.,**  
No. 1, MARKET STREET, MANCHESTER.

**THE BEVERLEY IRON AND WAGON COMPANY,**  
**LIMITED,**  
MANUFACTURERS OF RAILWAY WAGGONS, WHEELS AND AXLES,  
CASTS, LORRIES, WOOD WHEELS, PATENT WROUGHT IRON WHEELS  
AND AXLES, BARROWS, PUMPS, DOUBLE PURCHASE CRABS, &c., &c.  
IRON WORKS—BEVERLEY, YORKSHIRE.  
Catalogues free by post.

**ESTABLISHED MORE THAN HALF A CENTURY.**  
**THE TAVISTOCK FOUNDRY, IRON WORKS,**  
**AND HAMMER MILLS,**  
which have been carried on for more than half a century by  
**MESSRS. GILL AND CO.,**  
and obtained a  
**HIGH REPUTATION FOR**  
**SHOVELS AND OTHER TOOLS,**  
as well as for  
**ENGINEERING AND FOUNDRY WORK.**  
have been purchased by  
**MESSRS. NICHOLLS, MATHEWS, AND CO.,**  
BEDFORD IRON WORKS, TAVISTOCK.

For thirty years Messrs. NICHOLLS, MATHEWS, and Co., have been the pro-  
prietors of the latter works, but have now removed to the  
**TAVISTOCK FOUNDRY,**  
where, having the advantage of a never-failing stream of water of upwards of  
200-horse power, they will have increased facilities for speedily and satisfactorily  
executing all orders entrusted to their care.  
Manufacturers of STEAM ENGINES and BOILERS, on the newest principle,  
pump work, brass and iron; hammered iron shafts, of all sizes; miners' steel  
and iron tools.  
Messrs. N. and Co. have had a LARGE EXPERIENCE IN PREPARING MA-  
CHINERY FOR FOREIGN MINES, as well as selecting competent mechanics to  
superintend the same.  
N. and Co. have always a LARGE STOCK OF SECOND HAND  
MATERIALS, including a WATER WHEEL, 25 ft. by 3 ft., with drawing  
machines attached, and cast-iron segments, socket, and axle, in good condition;  
and a large quantity of PITWORK of all sizes.

**UNRESERVED SALE.**  
**THE GREAT MOELWYN SLATE QUARRY, NORTH WALES,**  
In the parishes of Festiniog and Llanfrothen.

**MESSRS. CLEAR AND CHEFFINS** are instructed by the  
proprietor to SELL, BY AUCTION, on Tuesday, September 27, 1870, at the  
Auction Mart, Trenchard-street, London, E.C., at One o'clock precisely, in  
One Lot, the unexpired term of the LEASE of the

**GREAT MOELWYN SLATE QUARRY.**  
Which embraces an area of about THREE THOUSAND ACRES, together with  
all the valuable PLANT, MACHINERY, and IMPLEMENTS, which include a  
powerful TURBINE (with ample water supply), and every requisite for slate  
making on a large scale; engine-house, workshops, barracks, and outbuildings,  
all of which are in good repair.

The quarry communicates with the Festiniog Railway by means of an incline.  
The drums, ropes, wagons, and plant, for the necessary working of which, are  
included in this purchase.  
Particulars and conditions of sale may be obtained of Messrs. CLEAR and  
CHEFFINS, Etheburgate House, 70 and 71, Bishopsgate-street Within, London,  
E.C.; and JAMES WRIGHT, C.E., 12, Copthall-court, London, E.C.

**GLAMORGANSHIRE, SOUTH WALES.**  
**VALUABLE TIN-PLATE AND IRON WORKS.**  
Situate about three miles from the Port of Swansea.

**M. JOHN M. LEEDER WILL SELL, BY PUBLIC**  
**AUCTION,** at the Mackworth Arms Hotel, Wind-street, Swansea, on  
Tuesday, the 4th day of October, 1870, at Three o'clock in the afternoon, all  
those valuable and long-established TIN-PLATE and IRON WORKS, known as  
**THE UPPER FOREST WORKS,**

With an excellent RESIDENCE for a proprietor.  
The works consist of Forge, with powerful Machinery, Six Rolling Mills, and  
Tin-plate Houses, equal to a production of upwards of 2000 boxes of Tin-plates  
per week. The whole is worked by one powerful high-pressure condensing, and  
two high-pressure non-condensing Engines, and a Water-wheel, with an un-  
failing supply of water. There is a good road and canal communication direct  
to the above-named port, and a railway is in course of construction. The works  
are held under long leases, at a yearly rental of £335.

Plan of the works and conditions of sale, with cards to view, may be had on  
application to the Auctioneer, at his office, Oxford-chambers, Oxford-street,  
Swansea.

**CARMARTHENSHIRE.**  
**TIN-PLATE WORKS, WITH DESIRABLE RESIDENCE, AND**  
**WORKMEN'S HOUSES.**

**TO BE SOLD, BY PRIVATE CONTRACT, all those TIN-PLATE**  
**WORKS,** known by the name of

**THE LLANGENNECH TIN-PLATE WORKS,**  
Situate at LLANGENNECH, in the county of CARMARTHEN; together with  
BLACK PLATE MILLS, worked by two powerful engines and machinery; an-  
nealing house, with all needful appliances; tin house, pickling house, assort-  
ing room, ample warehouse and storage room, offices, stabling, and other ne-  
cessary conveniences complete, as the same were lately carried on by Mr.  
Thomas Harries.

The Works are nearly new, in perfect repair, full working order, and capable  
of manufacturing 1200 boxes of tin-plates weekly.  
The brands are well known in the market, and command full prices.

In addition to the foregoing, there is now in course of erection a spacious  
forge, on which a large sum of money has been expended, and on its comple-  
tion, which can be accomplished in a short time, and at a comparatively small  
outlay, will be capable of turning out about 100 tons of manufactured iron  
weekly.

The above premises are held under a lease for a term of 99 years from the 29th  
of September, 1866, at the low ground rent of £100 per annum.  
The works are most eligibly situated, within three miles of the port of Llanelly  
and fourteen of Swansea; the Llanelly Railway, with which a junction can  
easily be effected, and was about to be made, runs close to the property, and  
affords an easy transit by the narrow gauge system to the North, and all parts  
of the kingdom.

With the works will also be sold all that most desirable RESIDENCE, called  
PLAS ISSA, comprising 59A, 2B, 2P, of arable, meadow, and pasture LAND,  
including therein about 17A. of park-like land adjoining the house, the whole  
being a desirable appendage to the works, and affording a capital residence for  
a managing partner. It is held under a lease, dated 30th July, 1855, for the  
term of 99 years from the 25th day of March preceding, at the annual rent of  
£111 10s.

There are also several newly-erected workmen's houses, and others now in  
course of erection, held for long terms of years, at low ground rents—the whole  
forming a very favourable opportunity to any persons desirous of establishing  
themselves in business under most advantageous circumstances.

The Mines and Minerals under the property, with the usual powers of work-  
ing the same, on payment of damage done to the surface, are reserved.  
For particulars, apply to—  
Messrs. STRICK and BELLINGHAM, Solicitors, Swansea.

**PRELIMINARY ADVERTISEMENT.**

**SALE OF CHILIAN COPPER MINES, AND MINING PROPERTY.**

**TO BE SOLD,** pursuant to an Order of the High Court of  
Chancery, about to be made in a Cause of Waters v. Waters, with the ap-  
probation of the Master of the Rolls, in the City of London, in or about the  
month of June, 1871, the whole of the extensive and rich COPPER MINES,  
PARTS OF MINES, MINING PROPERTY, and MATERIALS, and FREE-  
HOLD PROPERTIES IN CHILLI, with the STORES and BUSINESSES carried  
on in connection with the said MINES, forming part of the Chilian Estate of  
Sampson Waters, late of Gyllyndune, in the County of Cornwall, Esq., de-  
ceased. The MINES consist of—

- 1.—THE ENTIRETY OF THE SAN PEDRO MINE.
  - 2.—TWO-THIRDS of the celebrated DESCUBRIDORA MINE, with the ad-  
joining sets of the Rolls, in the City of London, and San Francisco.
  - 3.—THREE-FOURTH PARTS OF THE COLORADA (SILVER) MINE.
  - 4.—NINE (48th) PARTS OF THE JUANA (SILVER) MINE.
  - 5.—THE ENTIRETY OF THE SANTA ELENA (COPPER) MINE.
  - 6.—THE ENTIRETY OF THE CUBA (COPPER) MINE.
- The SAN PEDRO MINE is situated about 60 miles from the port of Cha-  
naral. It produces ores of the richest quality. This mine may now be effec-  
tually worked, a large shaft, with a double-skip-road, having been recently sunk,  
two new 4-horse engines erected, and the mine well and strongly timbered.

The DESCUBRIDORA MINE has been worked since 1859, since which date  
it has yielded large profits, and is still doing so. The principal vein averages  
30 to 80 ft. in width, and a large quantity of ore has been discovered.

The adjoining sets have been worked since 1865; they are on the same lodes  
as the Descubridora Mine, and one of them (the Canchas set) is yielding a  
profit.

These mines are in thorough working order, and in a few weeks from this date  
will be supplied at a heavy outlay with new steam-engines, which will largely  
increase the future returns. Remunerative shops and stores are attached to  
the mines, and are carried on in conjunction with them.

The other property which will be OFFERED FOR SALE consists of the EN-  
TIRETY OF FREEHOLD DWELLING HOUSES, STORES, SHOPS, WATER-  
ING PLACE, TIMBER, MATERIALS, ORE FLOORS, and OTHER PROPERTY  
(including a large condensing apparatus), situated at Chanaral, Chanareito,  
Copiapo, and Tres Puntas; the Quinchigul establishment, or watering place,  
with the dwelling house, store, yard, carts, and mules; two-thirds of the Vega  
establishment, with the yards, houses, shops, and stores; two-thirds of the  
dwelling houses and yards, store rooms, ore floor, the mole, and premises in  
the port of Pan-de-Azuar; seven-eighths of the watering place at Tres Puntas, and  
one moiety of the watering place at Punta Negra.

Fuller particulars of the property will be given in future advertisements.  
Any information will be afforded by Mr. S. T. G. DOWLING, Solicitor, Red-  
ruth, Cornwall; Messrs. PRICE, BOLTON, and FIDLER, Solicitors, 1, New-  
square, Lincoln's Inn, London; or Messrs. FRESHFIELDS, Solicitors, 6, Bank-  
building, London, E.C.

Dated this 31st day of August, 1870.

**ABERDARE STEAM COAL DISTRICT.**

**TO BE DISPOSED OF, BY PUBLIC AUCTION,** about the  
end of September next, unless previously sold by private treaty, a  
FIRST-CLASS STEAM COAL PROPERTY, in full working order, equal to a  
vend of 300 tons per day, and capable of being increased in a reasonable time  
to 600 or 800 tons per day.

The colliery is conveniently situated as regards railway communication,  
having access to Swansea, Cardiff, and Newport, as well as Liverpool and London,  
and all the railways in the kingdom.

Further information may be obtained on application to Mr. RANDALL, Soli-  
citor, Neath; or Mr. W. ROBINSON SMITH, Solicitor, Swansea.

**NORTH FIELD IRON WORKS, ROTHERHAM.**

**TO BE SOLD, BY PRIVATE TREATY, or LET for a TERM**  
of YEARS, the NORTH FIELD IRON WORKS, situate on the banks of  
the River Don Navigation, at Rotherham, with a siding into the Manchester,  
Sheffield, and Lincolnshire Railway, comprising FORGE TRAINS, MER-  
CHANT MILL, FURNACES, STEAM HAMMERS, SOLID TYRE, ROLLING,  
and other machinery adapted to an extensive business.

Price, rent, and other particulars may be known on application to Messrs.  
HOTTE and SON, Solicitors, Rotherham.

**MINE SPARE MATERIALS FOR SALE AT WEST CARADON**

MINE near LISKEARD, consisting of ENGINES, BOILERS, PUMPS,  
RAIL IRON, &c.  
Offers for the above will be received by Mr. W. J. LAVINGTON, 9, Union Court,  
Old Broad-street, London, E.C.

Tenders to state price and mode of payment, and to be sent in not later than  
the 24th inst.

The Committee of Management will not hold themselves responsible for any  
rents or charge from the lords after that date, and do not bind themselves to  
accept the highest or any tender.

The whole of them can be seen at any time upon application to the agent on  
the mine.

**TO BE LET, ON LEASE, for a term of years, SEVERAL**

ACRES of LAND, suitable for MANUFACTURING PURPOSES, advan-  
taneously situated on the south bank of the River Tyne, about two miles below  
Newcastle-on-Tyne, and within a quarter of a mile from the North-Eastern  
Railway. There is a good quay frontage, with deep water.  
Apply to Mr. T. S. BLANWELL, King-street, Quay side, Newcastle-on-Tyne.

**VALUABLE CORNISH MINING MACHINERY.**

**MESSRS. J. C. LANYON AND SON** have FOR SALE a very  
superior lot of the above, including—  
80, 70, 60, 50, 30, and 24 inch PUMPING ENGINES;  
24 inch ROTARY ENGINE, with CAPSTAN;  
22 inch ditto, with CAPSTAN and CRUSHER;  
Several good BOILERS;  
A large assortment of PITWORK of all sizes; STRAPPING PLATES, rolled  
and faggoted, all of which are secondhand, in good condition, and will be sold  
on very reasonable terms.

For particulars, apply to—  
**LANYON AND SON, MERCHANTS, REDRUTH.**  
Dated Redruth, Feb. 23, 1870.

**IMPORTANT NOTICE.**

**TO MINE PROPRIETORS, AGENTS, AND ENGINEERS.**

**MESSRS. J. C. LANYON AND SON, of REDRUTH,**  
CORNWALL, having PURCHASED the WHOLE of the PLANT of the  
CLIFFORD AMALGAMATED MINES, beg to call the attention of all parties  
requiring SECONDHAND ENGINES, BOILERS, PITWORK, or MINING  
MATERIALS of any description, to the unprecedentedly favourable opportunity  
thus afforded for supplying their wants on the most favourable terms.  
Communications to be addressed to—  
July 4, 1870. J. C. LANYON AND SON, REDRUTH, CORNWALL.

**SECONDHAND MINING MACHINERY FOR SALE,**  
**IN FIRST-RATE CONDITION.**

**PUMPING ENGINES,** of various sizes,—viz., 70 in., 60 in.,  
50 in., 40 in., 30 in.  
**WINDING ENGINES, STAMPING ENGINES, STEAM CAPSTANS, and**  
**CRUSHERS** of various sizes.  
**A NUMBER OF BOILERS.**  
**PITWORK** of all descriptions, and all kinds of MATERIALS required for  
MINING PURPOSES.

**TO BE SOLD, AT MODERATE PRICES.**  
For further particulars, apply to—  
**MESSRS. HARVEY AND CO.,**  
**ENGINEERS AND GENERAL MERCHANTS,**  
**HAYLE, CORNWALL,**  
AND HAYLE FOUNDRY WHARF, NINE ELMS, LONDON,  
CITY OFFICES (GRESHAM HOUSE), 23, OLD BROAD STREET,  
MANUFACTURERS OF  
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES of  
the largest kind in use, SUGAR MACHINERY, MILLWORK, MINING  
MACHINERY, and MACHINERY IN GENERAL.  
SHIPBUILDERS IN WOOD AND IRON.

**THE PATENT PNEUMATIC STAMPS**

May be SEEN AT WORK at HAYLE FOUNDRY WHARF, NINE ELMS,  
by previous application at either of the above addresses.

**PORTABLE AND FIXED ENGINES.**

**FOR SALE, PORTABLE AND FIXED ENGINES,** from 4 to  
25-horse power, warranted of first-class make and workmanship.  
Also, several SECONDHAND PORTABLES.  
Apply to—  
**LEWIN'S ENGINEERING WORKS, POOLE, DORSET.**

**SOUTH EXMOUTH MINE, HENNOCK, DEVON.**

**FOR SALE, BY PRIVATE CONTRACT, the following, viz.:**—  
40 in. cylinder PUMPING ENGINE.  
25 in. cylinder WHIM ENGINE, with CRUSHER attached.  
60 fms. 11 and 12 in. PUMPS in shaft.  
30 fms. 11 and 12 in. PUMPS at surface.  
Timber, and various useful mining materials.  
Apply to Capt. JOHN CORNISH, Frank Mills Mine, Christow; or to Mr. J. O.  
HARRIS, Public Accountant, 2, Gandy-street, Exeter.

**FOR SALE, BY PRIVATE CONTRACT, at PAR CONSOLS,**

Par Station, CORNWALL, and close to Par Shipping Harbour,  
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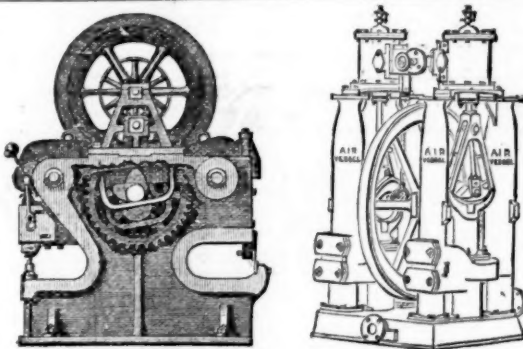
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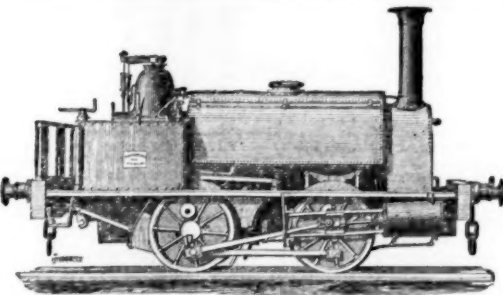
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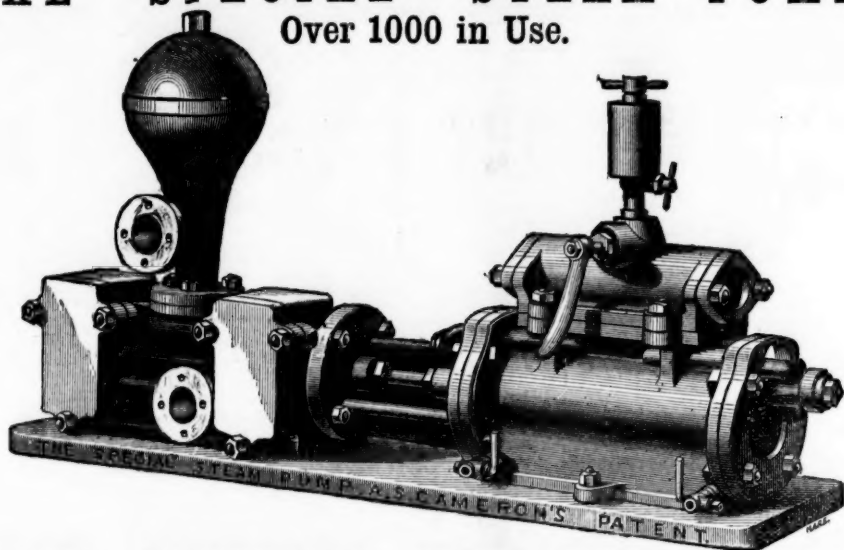
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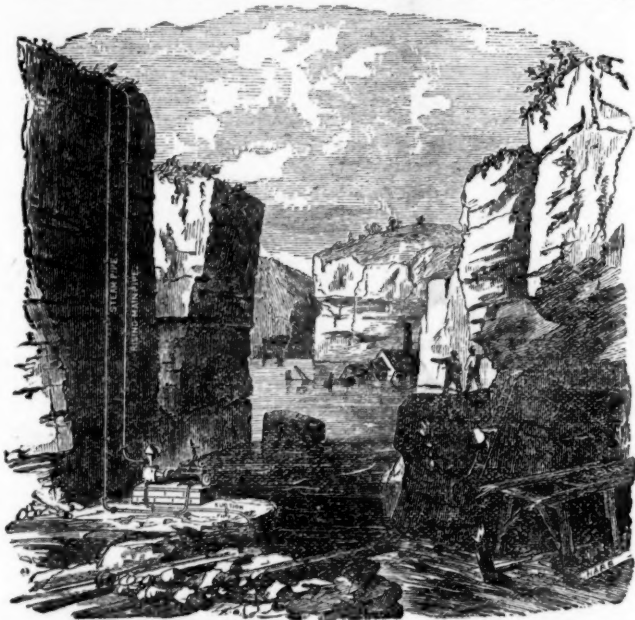
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The engraving illustrates the "SPECIAL" Steam Pump as employed in draining quarries. At the Bangor and Carnarvon Slate Company's Quarries, in Wales, four or five of these pumps, of different dimensions, are at work, as well as at other quarries in various parts of the kingdom.

The pump being fixed in the required position, steam can be supplied by means of a felted steam-pipe from any boiler situated several hundred feet away from the pump; and although a little extra condensation would in such case take place, this system



of draining quarries is found far more economical than employing detached engines and pumps, with their cumbrous details of shafting, gearing, riggers, and belts.

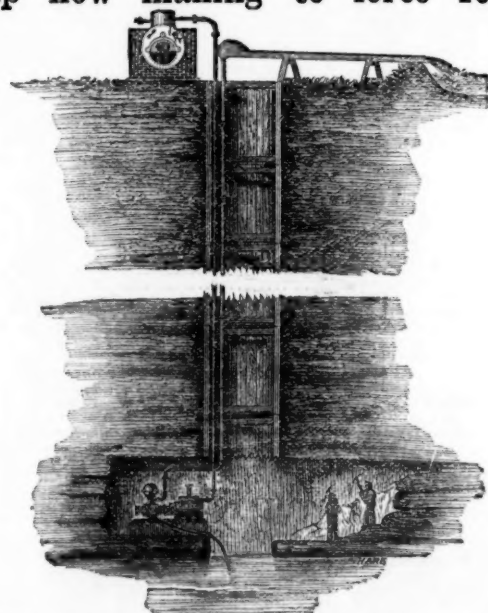
The "SPECIAL" Steam Pump can be adapted to work at either high or low pressure steam, and to discharge the water to a vertical height of from 200 to 400 feet. For very high lifts, pumps with long strokes are recommended.

The pump is very portable, and can be readily lowered nearer to the water as the work proceeds.

## THE "SPECIAL" STEAM PUMP AS APPLIED FOR DRAINING MINES.

One "SPECIAL" Steam Pump now making to force 1040 feet in one direct lift.

The arrangement in the accompanying illustration shows an economical method of draining mines without the expense of erecting surface-engines, fixing pump-rods, or other gearing. A boiler adjacent to the pit's mouth is all that is necessary on the surface; from thence steam may readily be taken down, by means of a felted steam-pipe, to connect the pump with the boiler. The pump may be placed in any situation that may be convenient for working it, and connecting the steam, suction, and delivery pipes.



These engines can be fixed and set to work in a

Comparatively short time, and also at a very small outlay. They are used in large mines as auxiliary engines, and will be found invaluable adjuncts in all mining operations.

To estimate the quantity of water to be raised by any given size of pump refer to the tabulated list below. It is recommended to use long-stroke pumps where the height exceeds 100 ft., so that the largest result may be obtained with a minimum wear and tear of the pump pistons and valves. The pumps are provided with doors for ready access to all working parts.

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Diameter of Steam Cylinder .....	inches	2½	3	4	4	6	6	6	7	7	7	8	8	8	8	10	10	12	12	14	16	24
Diameter of Water Cylinder .....	inches	1½	1½	2	4	3	4	6	5	6	7	4	6	7	8	6	7	8	10	12	7	10
Length of Stroke .....	inches	6	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	18	24	24	24	24
Strokes per minute .....		100	100	75	50	50	50	50	50	50	50	50	50	50	50	50	50	35	—	—	—	—
Gallons per hour .....		310	680	910	3250	1830	3250	7330	5070	7330	9750	3250	7330	9500	13,000	7330	9500	13,000	—	—	—	—
PRICE .....		£10	£15	£20	£35	£30	£40	£47 10	£50	£52 10	£57 10	£50	£55	£65	£75	£70	£80	£100	—	—	—	—

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Shares.	Company.	Paid.	Price.
£100	John Abbot and Co. [L.]	75 0 0	10 8 dis.
50	Blaetavon Iron and Steel Co. [L.]	7 10 0	—
100	Bolckow, Vaughan, and Co. [L.]	30 0 0	34 25 pm.
100	Brown, John, and Co. [L.]	70 0 0	8 6 dis.
10	Consett Iron Co. [L.]	7 10 0	47 5 1/2 pm.
500	Cannell and Co. [L.]	80 0 0	24 21 dis.
22	Elbow Vale Co. [L.]	27 10 0	8 1/2 dis.
20	General Mining Association [L.]	20 0 0	—
15	Hopkins, Gilkes, and Co. [L.]	10 0 0	3 3/4 dis.
10	Ironmasters' Company [L.]	10 0 0	3 1/2 dis.
10	Midland Iron Co. [L.]	5 0 0	19 20 dis.
2 1/2	Mercy Steel and Iron Co. [L.]	11 10 0	8 1/2 7 1/2 dis.
4	Mwyndy Iron Ore Co. [L.]	3 10 0	2 1/2 dis.
1	Nerbudda Coal and Iron	0 6 6	par. 1/2 pm.
25	Palmer's Shipbuilding and Iron Co. [L.]	25 0 0	3 1/2 dis.
25	Ditto	25 0 0	3 1/2 dis.
100	Parkgate Iron Co. [L.]	10 0 0	6 1/2 dis.
20	Patent Shaft and Axletree Co. [L.]	10 0 0	6 1/2 dis.
50	Rhymney Iron Co. [L.]	50 0 0	18 16 dis.
15	Ditto New	15 0 0	5 1/2 4 1/2 dis.
50	Shotts Iron Co.	50 0 0	18 1/2 dis.
100	Sheepbridge Iron and Coal Co. [L.]	55 0 0	16 15 dis.
100	Stavely Iron and Coal Co.	60 0 0	40 9 pm.
100	Ditto	10 0 0	7 9 pm.
100	Thames Iron Company	100 0 0	—
1 1/2	Titanic Iron and Steel	6 0 0	—
1 1/2	Vancouver Coal [L.]	6 0 0	par. 1 pm.
10	Van Iron Ore [L.]	10 0 0	21 22 dis.
100	Wigan Coal and Iron Co.	100 0 0	6 5 dis.
70	Ditto	70 0 0	6 5 dis.

## THE MINING SHARE LIST

Shares.	Mines.	BRITISH DIVIDEND MINES.	PAID.	LAST PR.	BUSINESS.	TOTAL DIV.	PERSHARE.	LAST PAID.
1500	Alderley Edge, c. Cheshire	10 0 0	—	—	—	10 6 8.	0 5 0.	Jan. 1869
6000	Boscawell, f. c. St. Just	1 0 0	—	—	—	0 2 0.	0 2 0.	Apr. 1870
200	Botallack, f. c. St. Just	5 0 0	220	220	220	580 5 0.	5 0 0.	Aug. 1870
2000	Bronfloy, f. Cardigan	2 0 0	—	—	—	2 9 0.	0 1 0.	July 1870
5004	Bwlch Consols, s. f. Cardigan	4 0 0	—	—	—	0 9 0.	0 2 0.	May 1870
6000	Cashwell, f. Cumberland	2 10 0	—	—	—	0 12 6.	0 3 6.	Sept. 1870
400	Cargoll, s. f. Newlyn	15 5 7	—	—	—	16 15 0.	0 10 0.	Aug. 1869
1280	Chanticleer, f. Flint	0 5 0	—	—	—	0 1 0.	0 0 0.	July 1870
2450	Cook's Kitchen, c. Illogan	19 14 0	17	17 1/2	18	32 3 0.	0 5 0.	July 1870
867	Cwm Erbin, f. Cardiganshire	7 10 0	—	—	—	32 3 0.	0 5 0.	July 1870
128	Cwmtythwl, f. Cardiganshire	60 0 0	—	—	—	347 10 0.	2 0 0.	July 1869
2800	Dewer Mines, s. f. Durham	300 0 0	—	—	—	177 0 0.	2 10 0.	July 1868
1024	Devon Gt. Consols, c. Tavistock	1 0 0	90	70	91	1145 0 0.	4 0 0.	May 1870
656	Ding Dong, f. Guisvald	49 14 6	20	17	19	7 10 0.	0 15 0.	Aug. 1870
1423	Dolcoath, f. f. Camborne	31 4 6	130	125	130	245 2 6.	0 9 0.	Aug. 1870
12800	Drake Walls, f. Calstock	2 10 0	13 1/2	13 1/2	13 1/2	11 3 0.	0 1 0.	July 1870
6144	East Cardigan, c. St. Cleer	2 14 6	4	4 1/4	—	14 11 0.	0 2 0.	July 1867
300	East Darnley, f. Cardiganshire	32 0 0	—	—	—	182 10 0.	2 0 0.	Feb. 1870
6400	East Pool, f. c. Pool, Illogan	0 9 0	8 1/2	8 1/2	8 1/2	10 12 3.	0 4 0.	Sept. 1870
1906	East Wheal Lovell, f. Wendron	3 9 0	34 1/2	33 3/4	—	12 16 0.	2 0 0.	July 1870
2800	Foxdale, f. Isle of Man	25 0 0	—	—	—	75 15 0.	0 10 0.	June 1870
5000	Frank Mills, f. Christow	3 18 6	2 1/2	2 1/2	—	4 8 0.	0 2 6.	Aug. 1870
3950	Gawton, c. Tavistock	3 10 6	—	—	—	0 9 0.	0 3 0.	Jan. 1868
18000	Great Laxey, f. Isle of Man	4 0 0	19	18 1/2	19 1/2	12 13 0.	0 10 0.	July 1870
3000	Great Northern Manganese	5 0 0	—	—	—	0 2 0.	0 2 0.	Feb. 1869
5908	Great North Wales, f. f. Helston	0 0 0	8	6 1/2	7	15 12 0.	0 3 6.	July 1870
10240	Gunnlake (Clitton), f. f. Helston	4 19 0	—	—	—	0 1 0.	0 1 0.	July 1870
1024	Holmfoot, f. near Liskeard	8 10 0	43	42 1/2	45	52 10 0.	1 10 0.	Feb. 1870
12000	Holmfoot and Kelly Bray, c. f.	1 0 0	—	—	—	0 8 0.	0 1 0.	Nov. 1869
10000	Killaloe, s. f. Tipperary	1 0 0	—	—	—	0 7 0.	0 0 7.	Mar. 1870
165	Levant, c. f. St. Just	10 8 1	—	—	—	1101 0 0.	2 0 0.	Aug. 1869
400	Launceston, f. Cardiganshire	18 15 0	—	—	—	529 0 0.	2 0 0.	Jan. 1870
30000	Maes-y-Safn, f. Flint	20 0 0	—	—	—	0 2 0.	0 2 0.	Oct. 1868
1800	Marke Valley, c. Cardigan	4 10 0	—	—	—	6 6 0.	0 5 0.	July 1870
20000	Minera Mining Co. f. Wrexham	7 0 0	8 1/2	—	—	373 3 8.	5 0 0.	Aug. 1870
30000	Minera Mining Co. f. Wrexham	7 0 0	8 1/2	—	—	0 4 6 1/2	2 1 1/2.	Aug. 1870
6400	New Pembroke, f. c. Par Station	5 0 0	—	—	—	0 2 6.	0 2 6.	June 1870
2000	North Levant, f. c. St. Just	10 12 0	11 1/2	11 1/2	12	1 15 0.	0 10 0.	Aug. 1870
5610	North Wheal Crofty, c. Illogan	3 11 3	2 1/2	1 3/4	2 1/4	0 2 6.	0 2 6.	June 1870
256	Pendarves United, c. f.	86 0 0	60	50	60	10 0 0.	0 10 0.	July 1870
8000	Penhalls, f. St. Agnes	3 0 0	—	—	—	9 6 0.	0 4 0.	July 1870
500	Phoenix, f. c. Linkinhorne	50 0 0	—	—	—	458 10 0.	7 0 0.	May 1870
12800	Prince of Wales, c. Calstock	10 12 6	39	38	40	0 10 0.	0 1 0.	Nov. 1869
1120	Princess of Wales, c. Calstock	10 6 7	39	38	40	98 12 6.	1 10 0.	June 1870
15000	Queen, s. c. Calstock	0 10 0	—	—	—	0 1 0.	0 1 0.	Sept. 1870
8869	Rosewell Hill & Ransom, f. f.	4 0 0	1 1/4	1 1/4	—	0 11 6.	0 1 6.	June 1870
512	South Cardigan, c. St. Cleer	1 8 0	260	240	250	647 10 0.	5 0 0.	July 1870
6000	South Darnley, f. Cardigan	3 6 6	—	—	—	1 0 0.	0 2 6.	Nov. 1869
927	South Wh. Crofty, c. Illogan	24 10 10	9 1/2	9 1/2	—	3 0 0.	0 10 0.	June 1870
496	So. Wh. Frances, c. Illogan	18 18 9	32	29	30	374 13 6.	1 0 0.	Mar. 1868
342	Spearn Moor, f. St. Just	26 17 2	—	18	20	13 15 0.	0 1 0.	June 1870
8771	St. Ives Consols, f. St. Ives	3 10 0	—	—	—	0 2 6.	0 2 6.	Nov. 1869
508	Summer Hill, f. Mold	3 18 6	—	—	—	2 5 6.	0 5 0.	Feb. 1868
12000	Tankerville, f. Salop	6 0 0	16	14 1/2	15	0 5 0.	0 5 0.	Aug. 1870
6000	Tincroft, c. f. Pool, Illogan	9 0 0	34	34	36	25 18 6.	1 10 0.	Sept. 1870
3000	Trumper Cons., f. Helston	11 10 0	24	21	23	11 12 0.	0 15 0.	Aug. 1870
12000	Van, f. Llandidies	4 5 0	65	60	65	2 0 0.	0 10 0.	June 1870
3000	W. Chiverton, f. Perranzabuloe	10 0 0	54	53	55	45 7 6.	2 0 0.	Aug. 1870
2582	West Great Work, f. Breage	5 11 0	—	27	29	4 10 0.	0 10 0.	Oct. 1869
512	Wheal Frances, f. Illogan	47 0 0	125	120	125	663 0 0.	2 10 0.	Aug. 1870
400	W. Wheal Seton, c. Camborne	5 2 6	75	70	75	632 10 0.	1 0 0.	June 1868
512	Wheal Basset, c. Illogan	10 15 0	55	52 1/2	55	32 0 0.	1 10 0.	July 1870
4296	Wheal Killy, f. St. Agnes	5 4 6	6 1/2	6 1/2	7	5 6 0.	0 7 0.	Aug. 1870
1024	Wheal Killy, f. St. Agnes	3 10 6	12	11 1/2	—	12 12 6.	0 10 0.	July 1870
896	Wheal Margaret, f. St. Agnes	13 17 6	6 1/2	6 1/2	—	78 5 0.	0 10 0.	Aug. 1870
1024	Wheal Mary Ann, f. Menheniot	8 0 0	9 1/2	9 1/2	—	71 6 0.	0 10 0.	Aug. 1870
1000	Wh. Mary Hutchins, f. Plimp.	2 12 6	—	—	—	10 10 0.	0 5 0.	Aug. 1869
80	Wheal Owhies, f. St. Just	2 0 0	—	—	—	464 13 12	10 0 0.	Aug. 1869
30	Wheal Seton, f. c. Camborne	60 0 0	52 1/2	48	50	254 15 0.	2 0 0.	Feb. 1869
17000	Wicklow, c. f. Wicklow	2 10 0	8 1/2	8 1/2	—	60 3 0.	0 5 0.	Sept. 1869

### FOREIGN DIVIDEND MINES.

35000	Almaden, f. Spain*	2 0 0	2	1 1/4	1 1/4	0 10 6.	0 2 0.	Mar. 1870
20000	Australian, c. South Australia†	7 7 6	—	—	—	0 1 6.	0 6 0.	Aug. 1868
15000	Cape Copper Mining*	7 0 0	16	15 1/2	16 1/2	5 17 6.	0 10 0.	May 1870
30000	Central American Association*	1 0 0	—	—	—	0 10 0.	0 10 0.	July 1869
10000	Coppor Mining Co. Chile†	16 10 0	3	2 3	—	0 4 0.	0 4 0.	April 1869
76162	Don Pedro North del Rey*	0 14 0	2 1/2	2 3	3	2 3 0.	0 4 0.	Mar. 1870
70000	English and Australian, c.	2 10 0	—	—	—	—	—	Feb. 1869
25000	Fortuna, f. Spain*	3 0 0	3	2 1/2	2 1/2	2 0 10.	0 3 0.	Mar. 1870
10000	Gousses, f. Sardinia†	3 0 0	—	—	—	10 percent.	..Aug.	1868
20000	Spanish Mining Co., Australia†	1 0 0	3	1 1/2	1 1/2	0 1 10.	0 6 0.	Nor. 1868
15000	Linares, f. Spain*	1 0 0	4 1/2	2 1/2	4 1/2	12 8 4.	0 5 0.	Mar. 1869
50000	Panuco, c. Chile†	4 0 0	2 1/2	2 1/2	2 1/2	10 percent.	..	Yearly.
10000	Pontbisaud, s. France†	20 0 0	17	16 17	—	7 1 8.	1 15 6.	Nor. 1869
100000	Port Philip, c. Clunes*	1 0 0	1/2	1/2	1	1 6 0.	0 1 6.	Jan. 1870
120000	Scottish Australian Min. Co.†	1 0 0	—	—	—	6 percent.	..Apr.	1870
11000	St. John del Rey, Brazil†	15 0 0	22	21 28	—	81 10 0.	4 5 0.	Dec. 1867
15000	Sweetland Creek, c. California*	4 0 0	3 1/2	2 1/2	3	0 4 0.	0 4 0.	June 1870
50000	Victoria (London) [25000 £ pd., 25000 12s. 6d. pd.]	—	—	—	—	0 9 7.	0 7 0.	July 1869
40000	West Canada Mining Co.	1 0 0	—	—	—	0 19 6.	0 2 6.	May 1868